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THE DIAGNOSIS OF LATENT OR INCIPIENT DIABETES*

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The diabetic investigations of F. M. Allen began with a research, in the department of Preventive Medicine and Hygiene of the Harvard Medical School, concerning the influence of food factors (especially increased sugar consumption) in connection with the apparently rapid increase of diabetes. In his first publication on this subject, Allen [1] suggested the existence of a large class of predisposed persons in whom the occurrence or nonoccurrence of diabetes might be determined by diet; and in his experimental work he was able to create such a predisposition in dogs by removal of suitable portions of the pancreas, so that the animals remained healthy on restricted diets but developed fatal diabetes on carbohydrate overfeeding.

In subsequent experimental work at the Rockefeller Institute, Allen [2] proved the existence of a distinct relationship between the internal pancreatic function and the body weight, even when the alterations of weight were due to adding or withdrawing fat. By reduction of the total diet and body weight even the severe forms of diabetes could be arrested, while attempts to increase the total calories and weight with fat or any other food brought a return of the typical symptoms and downward progress. A treatment for human patients was thus developed, based on regulation of the total diet and body weight in proportion to the severity of the diabetes. Joslin [3] has recently applied a similar principle to prophylaxis, demonstrating statistically that the vast majority of persons who develop diabetes are those who are overweight, and urging rational restraint of diet and weight as one of the most important means of reducing the incidence of diabetes.

The character of the assumed predisposition of human patients, to which the partial pancreatectomy of dogs may be comparable, also deserves attention. Recent pathologic studies have shown that pancreatitis is common, not only as a chronic but also as an acute process, usually without symptoms permitting of a clinical diagnosis, but leaving the pancreas more or less scarred and damaged permanently. Allen [4] has adduced experimental and clinical evidence in favor of the view that such infectious or toxic damage of the pancreas is the primary cause of diabetes. Mitchell [5] made a clinical study of 116 cases of diabetes, and in the histories of fifty-one of these was able to trace a suggestive relationship between the diabetes and some antecedent infection. In eight instances there was an onset of diabetes during or immediately following the infection, as in a number of cases reported in the previous literature. In the remaining forty-three cases the diagnosis of diabetes was postponed for months or even for many years after the infection in question. If the general correctness of these assumed relationships and the frequency of pancreatic lesions be granted, it must be concluded that there is a considerable number of individuals among the population more or less in danger of diabetes by reason of pancreatic damage, and that an important preventive step may be taken by recognizing these persons and applying early prophylaxis.

The most valuable theoretical contribution to this subject would consist in a combined clinical and pathologic study, as once undertaken by Wille.[6] This author in 1899 reported the results of a research which consisted in giving glucose tolerance tests to as many hospital patients of all kinds as possible, and then studying the pancreas of all those who came to necropsy. Of 800 patients thus tested, necropsies were obtained on seventy-seven. Some suggestive relationships between the sugar tolerance and the state of the pancreas were thus demonstrated, but there was also a considerable doubtful or irregular list. Many such discrepancies might be obviated by the more accurate methods available today; first, by the finer recognition of pancreatic alterations, especially those of the islands; second, by more exact tests of the function of carbohydrate assimilation.

Formerly dependence was placed on urinary analyses, but the introduction of blood sugar determinations within the past few years has refined the standards of both diagnosis and treatment. Not only may milder grades of impairment of carbohydrate assimilation be recognized, when the hyperglycemia is not sufficient to overflow the threshold of the normal kidney, but also the important factor of renal impermeability may be excluded. In extension of earlier

* From the Physiatric Institute.

* Read before the Section on Pathology and Physiology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Allen, F. M.: Studies Concerning Glycosuria and Diabetes, Harvard University Press, 1913, Chapters III, X and XIII.

2. Allen, F. M.: Experimental Studies on Diabetes, Series I, J. Exper. Med. **31**: 363, 381 (April), 555, 575, 587 (May) 1920; Series II, Paper 2, Am. J. M. Sc. **161**: 16 (Jan.) 1921.

3. Joslin, E. P.: The Prevention of Diabetes Mellitus, J. A. M. A. **76**: 79 (Jan. 8) 1921.

4. Allen, F. M.: Experimental Studies on Diabetes, Series III, The Pathology of Diabetes, to be published; preliminary outline in Monograph 11 of the Rockefeller Institute, 1919, Chapter VIII.

5. Mitchell, J. W.: Clinical Indications of the Etiology of Diabetes, Medical Record, to be published.

6. Wille, E.: Deutsch. Arch. f. klin. Med. **63**: 546, 1899.

reports of hyperglycemia in a large proportion of cases of arterial hypertension or hypertensive nephritis, O'Hare [7] has recently shown that many such patients react to the glucose tolerance test with a hyperglycemic curve indicative of mild diabetes. Impaired renal permeability will necessarily prevent glycosuria in many such cases, but the assimilative deficiency indicated by the blood analyses may in all probability correspond to the various grades of pancreatic sclerosis which are frequent in patients of this type. Allen and Mitchell [8] applied the glucose tolerance test to distinguish the diabetic from the nondiabetic members of a family in which the incidence was high. Allen [9] advocated the application of this test for purposes of diagnosis and prophylaxis in all persons suspected of being disposed to diabetes, particularly in very obese persons and in all members of diabetic families, and gave examples of early cases revealed by this means. John [10] has recently published observations along this line begun in this institute in association with myself and subsequently continued independently in Cleveland.

given each hour. The individuals thus tested may be classified in three groups, as represented in the three tables.

Table 1 shows the sixteen cases which may be considered normal or approximately normal in their sugar assimilation. Nine of these subjects were supposedly normal individuals, particularly physicians and nurses chosen for controls. Five were hypertension patients, and two were obese persons tested on suspicion of diabetes. One of the supposed normals, Subject 5, departs slightly from the rule; for though the glycemia of 157 mg. per hundred cubic centimeters at the end of the first hour is easily within normal limits, the figures of 148 mg. at the second hour and 138 mg. at the third hour represent an unusual prolongation of the hyperglycemia. There was a similar type of curve in the hypertension patient No. 10. The hypertension patient No. 11 showed, after an ordinary mixed meal, the highest plasma sugar of the series, namely, 126 mg. per hundred cubic centimeters; also the hyperglycemia of 204 mg. at the half-hour period

TABLE 1.—GLUCOSE TOLERANCE TESTS WITH NORMAL ASSIMILATION

No.	Age	Weight, Lbs.	Subject	Plasma Sugar After C H Meal	Glucose Tolerance Test: Plasma Sugar (Mg. per Hundred C.c.) Before Glucose	½	1	2	3	4	Urine Glucose, % Before Glucose	1	2	3	4
1	39	152	Normal	111	117	157	136	092	091	...	0	0	0	0	0
2	26	150	Normal	116	101	138	120	107	...	...	0	0	0	0	0
3	26	139	Normal	...	110	142	107	106	082	...	0	0	0	0	0
4	24	118	Normal	...	106	150	127	115	087	...	0	0	0	0	0
5	36	146	Normal	103	108	...	157	148	138	112	0	0	0	0	0
6	30	162	Normal	113	101	117	109	089	...	071	0	0	0	0	0
7	50	163	Normal	...	107	189	175	146	098	...	0	0	0	0	0
8	40	123	Hypertension	...	113	192	157	087	106	102	0	0	0	0	0
9	52	143	Hypertension	...	101	139	127	103	076	106	0	0	0	0	0
10	60	163	Hypertension	...	108	181	164	135	135	101	0	0	0	0	0
11	45	149	Hypertension	126	098	204	116	088	088	086	0	0	0	0	0
12	40	123	Hypertension	...	113	192	157	087	106	102	0	0	0	0	0
13	20	190	Obesity	100	087	102	103	099	079	...	0	0	0	0	0
14	38	222	Obesity	...	130	187	077	...	...	...	0	0	0	0	0
15	24	117	Normal	...	102	136	127	103	089	105	0	0	0	0	0
16	25	131	Normal	...	124	140	121	100	082	...	0	0	0	0	0

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METHOD OF STUDY

The present study could not include necropsy examinations, as would have been desirable for following the admirable plan of Wille. The method consisted in blood sugar analyses by the well-known Benedict method, sometimes during digestion of mixed meals, but especially after ingestion of 100 gm. of pure glucose, or in children 2 gm. of glucose per kilogram of body weight. For average sized adults it was considered reasonably accurate to use the arbitrary dosage of 100 gm., as dosage based on the body weight will be subject to the errors of irregularities in the weight of bone, fat and other relatively inert tissues; also, in view of variable rates of absorption, the test cannot be a very finely graded one, but is used in the attempt to reveal any important defect of assimilation. In applying the test, a blood sample was taken from the patient fasting (before breakfast). The glucose was then given dissolved in 200 c.c. of water, followed by a taste of lemon to combat nausea. Blood was then taken at the half hour, and later hourly for four hours. During this time 200 c.c. of water was

after 100 gm. of glucose was the highest in the entire series; but the explanation may have been quick absorption, for the figures at the hour interval and later were distinctly low. In general these sixteen curves correspond to the values described as normal by previous writers, and according to present knowledge they serve to exclude the existence of any diabetic tendency. It is possible, therefore, for patients with marked arterial hypertension to have normal power of sugar assimilation, and also for markedly obese individuals to be free from any demonstrable danger of diabetes.

The fifteen subjects represented in Table 2 were free from any diabetic heredity, as far as the family history could be learned. The first four were supposedly normal individuals, one being a nurse and the other three relatives of diabetic patients by marriage but not by blood. No. 1 is questionable, because after taking 100 gm. of glucose the plasma sugar rose to 214 mg. at the end of an hour, but the test was then ended by vomiting; a test on another day then yielded normal figures. Some suspicion persists because this subject sometimes shows glycemia slightly above the ordinary normal (e. g., 136 mg.) after ordinary mixed meals. The other three supposed normals exhibited plasma sugar curves demonstrating definite impairment of assimilation. Of the next eight subjects, seven were

7. O'Hare, J. P.: Glucose Tolerance Test in Chronic Vascular Hypertension, Am. J. M. Sc. **159**: 369 (March) 1920.
8. Allen, F. M., and Mitchell, J. W.: A Case of Hereditary Diabetes, Arch. Int. Med. **25**: 648 (June) 1920.
9. Allen, F. M., in Nelson's Loose-Leaf Medicine **3**: 73, 91, 1920.
10. John, H. J.: Paper read before the annual convention of the Ohio State Medical Society, 1921.

hypertension patients (No. 10 also obese) and one had marked arteriosclerosis without hypertension. In the test with 100 gm. of glucose, two of these patients excreted no sugar and the others only the barest traces, but the curve of hyperglycemia may be called diagnostic of mild diabetes. The last three subjects in this series came for examination because alimentary glycosuria had been reported by their family physician or in an insurance examination, though sugar was generally absent from the urine. The first of these three (No. 13) showed with the glucose tolerance test a series of plasma sugars which were normal except for the slight excess (195 mg.) at the end of the first hour. The traces of glycosuria indicated a lower renal threshold than in some other cases of the series. Nevertheless, when any person (especially at such an age as 23) responds to a glucose test in this manner, and also has distinct hyperglycemia after mixed meals, is subject to exacerbations with slight infections, and fails to recover normal tolerance in an observation extending over several months, dietary prophylaxis against diabetes is in order. Subjects 14 and 15 exhibited plasma sugar curves which were clearly diabetic.

From an examination of the right-hand column of the table it will be seen that individuals of the fifteen complained of no subjective symptoms. One of the supposed normals (No. 3) had been pronounced normal by several physicians to whom he had applied on account of feelings of unnatural fatigue and weakness. These symptoms were relieved by a mild antidiabetic diet, which kept his plasma sugar normal. Another supposed normal (No. 4) was relieved of an intractable painful neuritis by similar treatment. The interpretation in the hypertension cases is less simple, because the symptoms might be attributed to either the hypertension or the mild diabetes. In our experience, treatment for diabetes by carbohydrate limitation and reduction of weight has seemed to be beneficial to these patients. We have observed little or no benefit in non-diabetic severe hypertension cases from undernutrition. It may be that the benefits which are sometimes attributed to undernutrition in hypertension will be explainable partly by the limitation of salt and partly by this frequent diabetic complication.

The principal purpose of this paper is to give a preliminary report of an investigation of the members of diabetic families by the method described. Up to the present, forty relatives of twenty-three of our diabetic patients have been thus examined. This number will be greatly enlarged before a final publication is undertaken or positive conclusions drawn. The results to date, as shown in Table 3, are so striking that these tests are being applied to all available members of the families of diabetics treated in this institute.

In the first example in Table 3, the test was applied to the brother, aged 39, and to the daughter, aged 25, of a man with diabetes. The daughter showed a thoroughly normal assimilation. The brother not only responded with both hyperglycemia and glycosuria in the glucose tolerance test, but also exhibited abnormal hyperglycemia (157 mg.) after an ordinary meal containing carbohydrate. Restriction of diet as suited for the treatment of mild diabetes has accomplished two results for this person: (1) It has relieved him of the pain of a neuralgia which had stubbornly resisted other treatments and (2) it has probably saved him from the outbreak of a frank diabetes some time in the future.

TABLE 2.—GLUCOSE TOLERANCE TESTS, SHOWING IMPAIRED ASSIMILATION WITH NEGATIVE FAMILY HISTORY

No.	Age	Weight, Lbs.	Subject	Glucose Tolerance Test: Plasma Sugar (Mg. per 100 C.c.) Before Glucose	½	1	2	3	4	Urine Glucose, % Before Glucose	1	2	3	4	Diabetic Symptoms
1	22	114	Normal.....	{068 108	189 184	214 175	vomited 104	084	...	0 0	0 0	0 0	0	0	None
2	28	159	Normal.....	117	211	169	120	108	...	0	0	0	0	0	None
3	50	160	Normal.....	152	178	220	vomited			0	0	0	0	0	Fatigue, weakness, nervousness
4	53	168	Normal.....	116	214	260	220	143	100	0	trace	0	0	0	Neuritis
5	52	134	Hypertension.....	111	200	230	187	168	105	0	0	0	0	0	Neuritis, weakness, loss of weight
6	52	148	Hypertension.....	104	214	180	150	082	091	0	0	0	0	0	Fatigue, neuritis, nervousness
7	62	133	Hypertension.....	105	207	193	147	142	096	0	.16	0	0	0	Loss of weight, weakness, nervousness
8	53	147	Arteriosclerosis....	106	220	187	166	...	097	0	.20	0	0	0	Neuritis, nervousness
9	50	163	Hypertension.....	115	315	250	178	138	098	0	.20	0	0	0	Sciatica, fatigue, weakness
10	55	217	Hypertension.....	118	217	230	189	142	...	0	0	trace	0	0	None
11	54	187	Hypertension.....	111	182	214	169	150	094	0	trace	.21	0	0	None
12	56	168	Hypertension.....	117	255	300	214	150	094	0	trace	.22	0	0	Neuritis, nervousness
13	23	138	Diabetic (?).....	114	181	195	093	068	...	0	0	.25	.11	0	Alimentary glycosuria
14	48	161	Diabetic (?).....	124	182	222	187	143	102	0	.25	0	0	0	Alimentary glycosuria, nervousness
15	53	154	Diabetic (?).....	106	221	187	166	...	097	0	.20	0	0	0	Alimentary glycosuria, nervousness

In the second instance in the table, the father and sister of a diabetic patient were tested. Both were free from symptoms and were supposed to be normal. The sister proved to be normal, except that the glycemia of 136 mg. after a mixed meal was slightly high. Her response to the glucose tolerance test was normal. The father had a clearly abnormal hyperglycemia after an ordinary meal, and reacted to the glucose tolerance test with hyperglycemia and glycosuria of diabetic character.

In the third case in this table, the father, mother and uncle of a patient were tested. The mother and uncle were normal, but the father was obviously diabetic. This case was specially interesting because, according to the family history, given as accurately as possible by these persons, who were highly intelligent and fairly well informed concerning their ancestry, there was a well-marked diabetic heredity on the mother's side and none whatever on the father's side.

In Case 4, tests were applied to the father, mother and brother of a patient. The latter two were excused from the glucose tolerance test, because their low plasma sugar after meals containing abundance of carbohydrate seemed reasonably conclusive in excluding diabetes. The father's plasma sugar (140 mg.) during digestion was suggestive, and the glucose tolerance test confirmed his diabetic tendency.

In Case 5, the mother of the patient was found to be mildly diabetic. In Case 6, the same condition was revealed in both the mother and the father. In Case 7, the son and daughter of the patient were both diabetic.

In Case 8, the son and daughter of the patient both reacted normally to the glucose tolerance test, and in Case 9 the father and mother likewise responded normally. These instances were peculiar, in that in two of them the plasma sugar after a heavy carbohydrate meal was found to be 200 mg., and in the other two it was 144 mg. The opposite peculiarity was found in Case 10, wherein the brother of a patient showed a normal plasma sugar during digestion (122 mg.), but proved definitely diabetic in the glucose tolerance test. These findings show that the results of the mixed meal and of the glucose test from the glucose ingestion because of his low normal blood sugar after a meal. In Case 13, the patient's mother was normal. In Case 14, the father had a slight diabetic tendency. In Case 15, the glucose test of the father was not quite positive, but the plasma sugar after a mixed meal (156 mg.) showed the diabetic character. In Case 16, the daughter of a patient proved to be distinctly diabetic. In Case 17, the patient's sister was normal. In Case 18, there were some further discrepancies between the results of the test meal and the glucose test, but the 15 year old brother of the patient was plainly diabetic, and suspicion attached to some of the others. This is an interesting family, and will be described in greater detail elsewhere.

In Case 19, the brother of a patient gave results

TABLE 3.—TOLERANCE TESTS IN RELATIVES OF DIABETIC PATIENTS

No.	Age	Weight	Relation to Patient	Plasma Sugar After C H Meal Mg. per 100 Cc.	Plasma Sugar (Mg. per 100 C.c.)						Urine Glucose, %				
					Before Glucose	½	1	2	3	4	Before Glucose	1	2	3	Diabetic Symptoms
1	29	140	Brother	157	133	182	214	142	...	125	0	.22	.43	0	Neuritis
	25	124	Daughter	...	098	168	136	104	117	...	0	0	0	0	None
2	59	176	Father	150	104	205	250	150	088	091	0	.24	.36	0	None
	56	129	Sister	136	100	152	133	129	093	084	0	0	0	0	None
3	57	144	Mother	133	111	192	162	125	097	...	0	0	0	0	None
	29	140	Father	188	146	182	275	312	166	076	0	2.22	1.45	0	Neuritis
	29	160	Uncle	...	100	125	122	105	086	105	0	0	0	0	None
4	51	189	Father	140	104	157	220	166	083	...	0	.20	0	0	Weakness, nervousness
	47	216	Mother	102	...	...	...	...	...	...	0	0	0	0	None
	11	88	Brother	079	...	...	...	...	...	...	0	0	0	0	None
5	45	169	Mother	178	081	220	214	164	088	075	0	.21	.10	0	Sciatica
6	42	152	Mother	155	136	200	300	157	150	131	0	.24	.20	0	None
	49	208	Father	...	115	285	310	145	077	093	0	.50	1.02	.38	None
7	29	105	Daughter	133	130	238	260	162	127	109	0	.23	0	0	Loss of weight
	26	136	Son	154	103	220	250	125	094	...	0	.58	.40	0	Fatigue, nervousness
8	40	165	Son	200	102	115	103	...	...	...	0	0	0	0	None
	42	167	Daughter	144	114	150	146	112	...	...	0	0	0	0	None
9	49	168	Father	200	100	182	122	..	072	096	0	0	0	0	None
	47	159	Mother	144	112	147	133	104	096	...	0	0	0	0	None
10	17	138	Brother	122	110	226	242	187	092	101	0	0	26	0	Furuncles
11	44	168	Mother	205	164	200	189	187	157	142	0	0	0	0	None
12	44	136	Mother	177	117	234	189	175	148	125	0	.10	.12	0	None
	18	127	Brother	079	...	...	...	...	...	...	0	0	0	0	None
13	38	118	Mother	115	102	138	120	092	100	...	0	0	0	0	None
14	45	146	Father	150	106	220	187	123	105	093	0	0	0	0	Loss of weight
15	54	157	Father	156	117	198	175	133	090	...	0	0	0	0	Fatigue, nervousness
16	37	134	Daughter	140	120	214	285	209	102	...	0	1.24	.86	0	Weakness, nervousness
17	40	143	Sister	133	093	187	143	111	110	079	0	0	0	0	None
18	51	170	Father	115	133	162	187	139	078	089	0	.16	0	0	Sciatica
	44	123	Mother	168	115	187	150	123	086	107	0	0	0	0	None
	9	88	Brother	188	108	220	094	084	130	...	0	Trace	0	0	None
	15	105	Brother	166	125	189	214	166	136	093	0	0.4	0	0	Loss of weight, nervousness
	3	38	Brother	111	096	192	138	096	...	...	0	0	0	0	None
19	20	145	Brother	133	111	214	150	139	103	...	0	0	0	0	None
20	6	180	Daughter	150	111	200	295	250	...	...	0	0	0	0	None
	6	61	Daughter	172	091	150	214	169	...	...	0	0	0	0	None
21	20	135	Mother	122	106	162	125	085	078	123	0	0	0	0	None
	21	187	Father	168	121	200	168	130	100	...	0	0	0	0	Weakness, nervousness
22	50	164	Father	144	153	210	207	...	102	...	0	.70	0	0	Neuritis
23	47	158	Son	150	150	242	200	122	103	...	0	.20	0	0	Alimentary glycosuria, nervousness

are not always harmonious, and the details require further investigation. As the meals were not standardized, psychic reactions may furnish much of the explanation. When persons are asked to eat a liberal meal for the sake of a test for diabetes, some of them evidently eat as much carbohydrate as they are able, in order to make the test as severe as possible and learn whether there is anything in the slightest degree wrong with them. They may thus take so much sugar and starch that they impose a heavier burden on their assimilation than in the glucose test. Other persons dread the possibility of diabetes in such a manner that they largely refrain from eating carbohydrate in the test meal, and thus they may show a normal blood sugar, though diabetes is revealed by the glucose test.

In Case 11, the mother of a patient was diabetic by both tests. In Case 12, the mother likewise was diabetic by both tests, and the brother was excused which were suspicious but not positive. In Case 20, the twin daughters of a patient were diabetic in different degrees, though the marked renal impermeability prevented glycosuria. In Case 21, the mother of a patient was normal and the father was probably very mildly diabetic. In Case 22 the father, and in Case 23 the son, of the patient was diabetic.

COMMENT

A discussion of these results may be undertaken in three divisions: (1) as to the diagnostic significance of the tests; (2) as to their theoretical value, and (3) as to their practical value.

1. *Are the tests diagnostic of diabetes?* Provisionally, at least, we regard the tests mentioned as the most delicate and reliable diagnostic method which we now possess for diabetes, in both the negative and the positive sense. On the negative aspect, it is conceivable

that there may be diabetics with impaired intestinal absorption or with profound cachexia or other complicating conditions, so that the blood sugar might remain normal after mixed meals or after ingestion of 100 gm. of glucose; but these combinations are rare and would likewise interfere with the diagnosis of diabetes by any other means, unless the absorption factor should be excluded by the intravenous injection of sugar. On the positive side, some doubtful cases may be anticipated as with all diagnostic methods, and occasional confusion may be introduced perhaps by infections or other transitory causes of lowered assimilation; but when there is distinctly abnormal hyperglycemia after mixed meals, and when the ingestion of 100 gm. of glucose produces an elevation of blood sugar which exceeds the normal in both height and duration, we believe that a definite diagnosis of diabetes is afforded. The observations reported in this paper furnish three grounds to support this view: first, the remarkable number of positive tests of this character in families with diabetes; second, the insensible gradations by which the slighter degrees of impaired assimilation are merged with the cases of alimentary glycosuria and of frank diabetes; and third, the existence of mild diabetic symptoms in a high proportion of the cases which react positively, which clear up under antidiabetic diet and under no other treatment. If this conception is correct, other conditions, such as arterial hypertension and thyroid disorders, may enter in as complications, but the impairment of carbohydrate assimilation revealed by these tests must still be regarded as diabetic and therefore as a symptom of pancreatic disease and not of the complicating condition.

2. *Theoretical Value of the Tests.*—This topic also may be considered in three divisions:

First, all improvements in diagnosis enlarge knowledge. As, with time, the cases once distinguished as alimentary glycosuria were added to the list of true diabetics, so now the number of diabetics is further increased by the blood tests. We must recognize that diabetes is several times as prevalent as indicated by any statistics heretofore, and that the number of actual or potential diabetics in this country probably amounts to several millions.

Second, tests of this kind are practically indispensable for a correct study of diabetic heredity. We have been astonished by the findings shown in Table 3, namely, by the fact that of forty relatives of diabetic patients, having no suspicion of diabetes in themselves, half or more have shown impairment of carbohydrate assimilation. The number of cases to be classed as hereditary is thus vastly increased as compared with any statistics based on the family histories as taken by ordinary methods, and this familial incidence could doubtless be further enlarged if a greater number of relatives of each patient could be examined. Furthermore, the alterations affect not only the number but also the source of the diabetic heredity; e. g., instances in which one parent of a diabetic child gives a history of ancestral diabetes, and the other parent gives a negative family history, but the test shows that the latter parent is actually diabetic; likewise when there is no record of diabetes but the ancestry on one side is obese, yet the test shows that the obese parent has normal carbohydrate assimilation while the thin parent has latent diabetes.

Third, light is thrown on both the primary and the secondary etiology of diabetes. It is evident that there is constantly a considerable element in the population with latent diabetes. This may or may not give perceptible symptoms, and may or may not develop into the active form. It is certain, however, that this latent condition, characterized only by hyperglycemia and perhaps transitory glycosuria after special excesses in sugar or starch, frequently continues not only for months but also for many years. In the first place, therefore, we learn to seek more remote primary causes of the diabetes than has often been customary. When a patient, for example, complains of nervous shock or exhaustion, and glycosuria is found, we need not consider the diabetes as due to the recent nervous disturbance, but may rather regard the nervousness as a symptom of a latent diabetes, the true origin of which may be sought many years back in some infectious pancreatitis. Furthermore, the existence of such a large predisposed element in the population explains how overeating and obesity (since these can never be primary causes of diabetes) can serve to bring on diabetes, as demonstrated by Joslin. By these secondary agencies the incidence of active diabetes may be increased in certain families or entire races, while with frugal living a greater proportion of the latent cases remain latent and the individuals die of some other cause. In the third place, the recognition of this large class of persons with subnormal carbohydrate assimilation but without frank diabetes will probably aid in coordinating clinical and pathologic findings. Opportunity has been lacking for any direct proof of relationship between this subnormal assimilation and pancreatic lesions; but pathologists have long known that the number of cases of pancreatitis at necropsy is far greater than the number of reported cases of diabetes, and it may be anticipated that any extensive organic damage of the pancreas will be found associated with some functional deficiency if the tests are sufficiently exact.

3. *Practical Value of the Tests.*—In addition to the theoretical information, we believe that the tests have a very high practical importance in several ways:

First, in a considerable proportion of cases they furnish a clue for the clearing up of more or less distressing symptoms. This series, though short, proves that diabetes need not reach the point of glycosuria to cause symptoms, but in the stage of simple hyperglycemia may be responsible for neuritis, neurasthenia, feelings of weakness and weariness, etc.; and we suspect that even in this stage it may sometimes predispose to retinitis, cataract, gangrene, furuncles and carbuncles, and other serious complications. It is important that persons with such complaints be tested for their blood sugar both after ordinary meals and after glucose ingestion; and, when there is hyperglycemia, relief may be expected from an antidiabetic diet when other treatment is unavailing.

Second, the tests in our experience seem to contribute to peace of mind. It has been a not uncommon experience for the relatives of a patient to come inquiring whether any of them are in danger of diabetes, in particular for the parents of a diabetic child to ask whether they or their other children are likely to develop diabetes. Some persons take the attitude of not wishing to know, and prefer to have any impending dangers hidden from them; but the majority dread

chiefly uncertainty and wish to learn the facts as fully as possible. If both blood and urine remain normal after heavy mixed meals and after glucose ingestion, diabetes may perhaps not be positively excluded; also, there is no certainty that the individual may not develop pancreatitis next month and thus become diabetic; but it is at least possible to say that the existence of diabetes is practically excluded as far as our present knowledge extends. On the other hand, if the tests reveal an early diabetes, there may be some depression, but this is mingled with thankfulness that the condition was discovered in time to permit of the best results with the least difficulty or privation.

Third, we believe that the most important usefulness of these tests lies in prophylaxis. It is improbable that all these persons showing hyperglycemia will develop active diabetes. Some of the elderly, in particular, will live to die of some other cause. Some of the others will be saved by simple abstemiousness and good luck in escaping infections. The cases will differ greatly in their progressiveness, just as cases of outright diabetes do. Nevertheless, it is highly important to recognize the persons with diabetes in the latent stage, just as the earliest possible diagnosis is important in every disease. This early warning and prophylaxis may show their highest value in some youthful cases; but the very fact of the steady increase of the incidence of diabetes with advancing age is one indication that these diabetic tendencies keep cropping out in the form of active diabetes. This refinement of diagnosis will theoretically multiply the existing number of diabetics by several times, but if applied broadly enough in practice it will diminish the ravages of diabetes and reduce the number of diabetics in the ordinary sense to a degree that has never been possible before. It would be a valuable beginning, as Joslin suggests, to test the urine for sugar as well as albumin several times during every important infection and the following convalescence. As laboratory facilities are extended, it may be possible to reenforce this test with blood analyses, at least in doubtful cases. There are certain suspicious conditions in which tests of both blood and urine should always be made after a heavy mixed meal, and frequently glucose tolerance tests performed for additional security. These conditions are obesity, gallbladder infections, possibly hyperthyroidism or other endocrine disorders, and above all a history of diabetes in the family.

Though there is rarely a diagnostic method for any disease which is infallible, the combined blood and urine tests suffice to reveal an enormous number of latent or incipient diabetic cases, with or without symptoms, which have heretofore escaped diagnosis. Because of the customary progressiveness of diabetes under ordinary circumstances, and because of the belief that such progressiveness can be largely or wholly arrested by proper dietary precautions, our greatest service to these patients may be looked for in the earliest possible diagnosis and prophylaxis, before serious symptoms have ever occurred or severe dietary privations have become necessary.

ABSTRACT OF DISCUSSION

DR. E. P. JOSLIN, Boston: This interesting paper has appealed to all of us because of the possibility presented for detecting more cases of diabetes. In the last year (for the first time, perhaps, in thirty years) statistics have shown that the mortality of diabetes in this country has been diminishing. Perhaps we shall be enabled to reach early cases of diabetes and even help to prevent the onset of the disease. There were twenty-two cases of gallstones among my first 1,100 cases. The next 1,100 cases of diabetes showed thirty cases of gallstones, possibly because more interest was taken in the discovery of this condition. As few individuals under 30 are liable to gallstones, the proportion of gallstones in this series is much higher than 2 per cent.; indeed, it rises to 4 per cent. or a little more. Presumably a later series will show a still higher percentage. One other factor in the study of gallstones and diabetes was the time of onset of the symptoms of gallstones and of the diabetes. The gallstones began at 43 years in each series, but the onset of the diabetes was at 49 years in the first series and at 45 years in the second, possibly again showing closer attention being paid to the connection of diabetes to gallstones in the taking of histories. Hence, in the prevention of diabetes, one should bear in mind the desirability of removing gallstones when symptoms therefrom develop or even before. As to the detection and prevention of the early cases: The one factor which physicians should bear most strongly in mind in order to prevent diabetes is the relation which it bears to obesity. In a series of 1,000 cases of diabetes there was not one patient who had developed the disease whose weight at 50 or over was 20 per cent. under the standard for the height. Out of 1,000 there were only fifty-five more than 5 per cent. under weight. A second factor, but of less importance, is the information furnished by glucose tolerance tests. The more glucose tolerance tests are done the better, but we must not make a physician far from a laboratory feel that he cannot contribute to the prevention of diabetes because he cannot do this test. He must see that his patients stay underweight. One should be cautious in the interpretation of the test. If the glucose tolerance is negative, do not say, "You are not in danger of diabetes." That is not fair; one does not know how the test will result in another month, six months or a year. On the other hand, even if a glucose tolerance test is positive, one must remember that other reasons for this condition may be present. From a single laboratory test one must be extremely cautious before drawing far-reaching conclusions.

DR. REGINALD FITZ, Rochester, Minn.: I agree in emphasizing the importance of careful history taking. It is thus possible to obtain symptoms suggestive of pancreatitis in a fairly large number of cases. The Mayo Clinic has had one striking example of this: A patient with acute diabetes was found at operation to have multiple pancreatic calculi. After removal of the calculi, the carbohydrate tolerance increased to a surprising degree. This patient probably had an acute pancreatic type of diabetes. Owing to Dr. Joslin's stimulation, Dr. Beeler and I have studied recently glucose tolerance in a series of fat nondiabetic persons, all of whom were at least 10 per cent. overweight for their height and age. Besides making blood sugar determinations we found it important to follow the glycuresis according to the method of Benedict. About one third of our patients were prediabetic according to this test. The Mayo Clinic has had a large series of gallbladder cases complicated by diabetes, and Dr. Joslin's remarks in this regard are interesting. Wilder had made sugar tolerance tests on a lot of nondiabetic patients with diseased gallbladders. Many of these patients have a low sugar tolerance before operation. I have followed the postoperative course for several years of diabetic patients operated on for gallbladder disease in the Mayo Clinic. Removal of the gallbladder often has been followed by improvement, although it has not been curative. I find it difficult to believe that a diseased gallbladder has much more to do with the rate of development of diabetes than do septic tonsils or any other source of infection. Dr. Joslin's remarks in regard to sugar tolerance tests are worth emphasizing. Many papers have recently appeared reporting cases with abnormally low sugar tolerance. Pemberton has found that most patients with chronic rheumatism have a low sugar tolerance, but most patients with chronic rheumatism do not develop diabetes later. Most patients with cancer have a low sugar tolerance, yet the majority of these patients do not develop diabetes. A certain number of patients with hyper-

thyroidism have a diabetic curve of hyperglycemia after eating 100 gm. of glucose, yet true diabetes associated with this condition is comparatively rare. Before we can definitely say, therefore, that every patient with an abnormally low sugar tolerance is prediabetic, we must follow a large series through a much longer time than has been done heretofore.

DR. R. CARRASCO TORMIQUERA, Barcelona, Spain: In one case of well recognized diabetes, a slight case in which I made a test in the same line as Dr. Allen's, the blood sugar tolerance test did not clearly do harm to my patient. With normal people, we have found that some show no clear rise after ingestion of 100 gm. of sugar, but, in general, normal people show clear blood sugar rise, slight but clear, for 100 gm. glucose; but in every diabetic in whom I have found a rise of blood sugar after 100 gm. of sugar, if I have tried giving 50 gm. and sometimes even 25 gm., I have found a rise almost as high as I found with 100 gm. I know very well that I can draw no conclusions from this; but I tell these facts only as indicating a line of research that suggests the possibility of making Allen's tests not with 100 gm. but with lower amounts of glucose which very likely would give the same results and would be sure not to do harm in any case, or at least would increase the possibility of doing less harm in some cases. This amount, 100 gm., I think is based on no special reason; it is only something that remains from the routine amount employed in the test when the sugar was tested; and a normal individual will never show sugar with 100 gm. of glucose, or almost never. In this sense it is most useful to employ just the amount that will practically never give rise to sugar with normal people and in the great majority of cases will give rise to sugar with diabetic patients.

DR. HILDING BERGHARD, Boston: The last mentioned point is interesting. From various experiments of Dr. Cushing and myself, it is well known that 30 gm. and 200 gm. give just the same rise in the blood sugar. The difference is that the increase caused by 30 gm. changes to a decrease in half an hour, more rapidly than is caused by 200 gm. in an hour or an hour and a half. Small doses decrease in half an hour; big doses of 200 gm. decrease in two hours. That is much more important than the degree of increase. The decrease is much more important than we mostly think of in depending on the speed of absorption. If we have a fast absorption, as in gastro-enterostomy, as has been tested out in my own experience, we have a very rapid increase in the blood and even in the urine, just depending on the rapid absorption and rapid increase.

DR. F. M. ALLEN, New York: Of course, the height of the blood sugar curve is presumably governed partly by the rate of absorption of sugar, which may be as rapid after a smaller as after a larger dose. As the absorption and utilization of the larger quantity requires a longer time, the blood sugar remains up longer. The main reason for using 100 gm. was merely the established custom, which gives the advantage of normal standards as determined by the observations of a series of investigators. It may be entirely feasible to conduct such tests with smaller doses, but any one doing so must first establish his new standards. We have seen no harm from a single dose of 100 gm. glucose given on a fasting stomach, and should not be afraid to give it even in the milder grades of diabetes. No one test is to be regarded as infallible, and, like most other diagnostic procedures, the glucose tolerance test is to be interpreted in connection with other clinical facts. Various infections and toxic states may, perhaps, result in abnormal curves, but such states are usually transitory and capable of diagnosis by the usual means. But when a patient, apparently free from any other abnormality, regularly and repeatedly shows abnormal height and duration of the elevation of blood sugar after glucose ingestion and marked hyperglycemia after full mixed meals, we regard the condition as a potential diabetes. As there are wide differences in the progressiveness of manifest diabetes, some cases advancing to a fatal end in a few months while others maintain the character of mild glycosuria for perhaps ten to thirty years, so also there will presumably be differences in the progressivenes of these latent or prediabetic conditions. Some persons of this sort may live out their lives without ever developing active diabetes, but probably a larger number will develop glycosuria or other symptoms after a shorter or longer time. At any rate, these are the class of persons to whom dietary prophylaxis may be specifically directed, and it is well to recognize them.

AN ERUPTIVE FEVER OF UNUSUAL CHARACTERISTICS IN INFANCY AND EARLY CHILDHOOD*

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DETROIT

In April, 1919, I presented before the Wayne County Medical Society (Detroit) a preliminary report covering some twenty cases of an eruptive fever of unusual characteristics occurring in infancy and early childhood. Pending the opportunity for further study of the blood picture of the condition, publication was withheld. Of late, however, the occurrence has been encountered with increasing frequency so that the observed cases now number about thirty, and it seems desirable not to postpone further the bringing of this condition to general consideration. It is a disease which I have repeatedly observed during the last four years and which I have thus far been unable to identify with any hitherto described exanthem. Briefly, it is a disease of late infancy and earliest childhood, characterized by a period of high fever, followed by complete defervescence by crisis, and, during the early hours of the postfebrile period, the appearance of a macular eruption.

The disease has been observed in both sexes in about equal degree. It has occurred practically exclusively in babies of from 8 to 30 months, chiefly, however, in the second year. There has been no definite seasonal occurrence of it, although it has been most frequently observed during those periods when infection in general is most prevalent. Moreover, there has been no coincident relationship between the occurrence of it and outspoken epidemics of other eruptive fevers, so that I have been unable to explain it as the atypical instance, such as may occur during any epidemic, of some other current infection. The cases, which number approximately thirty, have in some instances occurred sporadically; in other instances, most particularly in recent days, four or five cases have grouped themselves in a manner suggestive of mild epidemics. In no instance, however, could one case be traced to another as evidencing communicability. In no instance were two cases observed in one household—in this connection one should remember, however, the relative infrequency of several children in one household within the age period affected. I have accordingly been unable to form any conclusion as to the incubation period of the disease, and have made no experiments as yet, cultural or otherwise, to determine its specific etiology.

SYMPTOMATOLOGY

A most striking feature of the disease is the sudden occurrence of a high fever in a previously apparently healthy baby. The fever when first noted is generally from 103 to 104 F., and tends to remain between these temperatures and 105 and 106, with no intermission and with very moderate remissions for a period of from seventy-two to ninety-six hours. The highest temperature noted was 106.5 F. With the high temperature

* This paper was first submitted for publication in November, 1919.

there is virtually no subjective discomfort on the part of the child, and no accompanying symptom worthy of note. In one instance, a convulsion ushered in the infection, and in another a somewhat notable disturbance of the circulation accompanied the hyperpyrexia. In only one instance—my own child—was there vomiting or other gastro-intestinal disturbance. Upper respiratory tract symptoms are conspicuously lacking. The posterior cervical lymph glands are palpable as in German measles; almost uniformly, reddening of the buccal membranes has been observed, and in the preeruptive stage, a diffuse, uneven reddening of the posterior portion of the hard palate, which may possibly be an enanthem. There occurs, however, a definite, though mild, pharyngitis involving the tonsils and soft palate, but without exudation.

On the beginning or the end of the fourth day, there occurs a complete defervescence by crisis. Generally the child, which has gone to sleep the preceding night with a temperature of from 104 to 106, awakens in the morning with a normal or slightly subnormal temperature. He appears as entirely well as previous to his illness. During the succeeding few hours, the eruption appears—first on the trunk, most frequently in the lumbar and adjacent thoracic regions, and often extending rapidly over the rest of the body, with particular preference for the back of the neck and the scalp, as is the manner of German measles. The face, however, is only slightly affected, and the lesions are relatively few on the arms and the legs. The lesions are often round, more frequently irregular macules of from 1 to 3 mm. in diameter, and are pale rose red, at times, chiefly when scanty, being more distinctly pinkish. They are not elevated. They are always discrete, save for the very occasional grouping of a few macules. In two instances occurring this summer, confluence has been observed accompanying a miliaria of heat origin, and in one case in the fall of 1919 in an infant with an eczematous tendency. At times the lesions may remain few in number, and they are then confined chiefly to the back. When few, they tend to become larger, and these larger isolated macules are sometimes immediately bordered by a narrow whitish areola, probably from 0.25 to 0.5 mm. in width. The eruption is nonitching. It reaches its height in a few hours, fades rapidly, and is generally entirely gone within forty-eight hours. There is no desquamation.

As the cases have occurred in household practice, and as the nature of the process present often was not suspected, particularly in many of the earlier cases, previous to the occurrence of the rash, the blood picture has not been determined in each case observed. However, there has been sufficient opportunity for observation in this respect in the lately observed cases, both in the pre-eruptive stages and eruptive stages, to permit me to state that there are no blood changes worthy of note; there is no increase in the leukocytes, in fact, there is a slight leukopenia as a rule, and there is no apparent change in the normal relationship between the mononuclears and the polymorphonuclears.

Because of the suspicion of pyelitis in all of these cases of high fever without apparent cause, the urine has been well observed in each instance. Save for the minor transitory disturbances incident to any high fever, the urinary and renal findings are negative.

In three instances a reddening of the ear drums was present during the febrile stage. In two instances an otitis media was assumed to be the cause of the fever and paracentesis was performed, without, however, ensuing discharge. The crisis and rash evidenced the true nature of the infection. It is likely that a mild tubotympanitis accompanied the pharyngitis present in these cases. It is unfortunate that these three cases were among those in which a blood count was not made.

In one case characterized from the outset by a hyperpyrexia—106.5 F.—a suppurative cervical adenitis ensued. No other sequela has been noted in any instance. From this, of course, it is to be deduced that the prognosis is uniformly good for complete and uninterrupted recovery.

As to diagnosis, there remains to be differentiated scarlet fever, measles, German measles and the fourth disease. The foregoing description, I believe, justifies the conclusion that this condition is an infectious disease, which eliminates the necessity of differentiating it from fever and eruption of alimentary or toxic origin. As to the eruption being a drug rash following the therapy employed in the febrile stage, the exanthem is the same irrespective of the drug used or if no drug is used at all.

Scarlet fever is readily differentiated by the absence of angina, the character of the eruption, the time relation between the fever and the eruption, and the absence of leukocytosis, complications, sequelae or desquamation. Likewise the scarlatiniform condition described by Watson is readily differentiated.

Measles is suggested by the four days of fever preceding the eruption. There is a complete absence of the catarrhal symptoms of measles; there are no Koplik spots; there is no fever during the eruptive stage, and the rash is not morbilliform.

The disease more closely resembles German measles. However, it differs from the usual manifestation of rubella in the prolonged period of high fever, the crisis, the nonconfluent eruption, the absence of desquamation, its nonoccurrence in older children, and its low or noncommunicability. However, it is not to be overlooked that it possesses identity with rubella in its blood picture.

From the condition described as the fourth disease, it is further differentiated by the nonscarlatiniform character of the rash and the absence of desquamation.

The treatment is purely symptomatic, and in general is confined to the management of the fever.

Unless the foregoing can be demonstrated to be an ordinary exanthem existing in atypical form due to a variation of the local strain of the virus, we are here dealing with an entity actually constituting a new disease. Until proof to this effect can be demonstrated beyond peradventure, however, it would be well to consider it an anomalous form of rubella, which of all previously described diseases it most closely approaches.

David Whitney Building.

Perinephritic Abscess Simulating Hip Joint Disease.—The *Semana Médica* **27**:824, 1920, contains a report by M. Sussini and J. P. Garrahan of three cases in children from 17 months to 4 years old in which suppuration around the kidney caused symptoms mistaken for hip-joint disease. The kidneys seemed to be sound and no cause for the abscess could be discovered; this was the case also in Muniagurria's experience. The total six cases confirm the favorable prognosis when the kidney is not involved and the abscess is properly drained. In the youngest child, four months had elapsed before the correct diagnosis was made and the abscess evacuated.

A FEBRILE EXANTHEM OCCURRING IN CHILDHOOD

(EXANTHEM SUBITUM) *

BORDEN S. VEEDER, M.D.
AND
T. C. HEMPELMANN, M.D.
ST. LOUIS

One morning one of us was called to see a boy about 10 years of age with a temperature of 104. A careful physical examination was absolutely negative. The story was that the previous morning the boy had arisen complaining of slight headache, but had gone to school, some miles out in the country, where he remained all day and played baseball despite his headache and a feeling of malaise. When he returned home he was quite exhausted and did not want his supper. His temperature was found to be 102, and by 1 o'clock in the morning had reached 104. No cause could be found for the rise of temperature, and a second examination was made about 1 o'clock that afternoon, as the temperature had reached 105. The temperature remained high all that evening and night, but was down to about 101 the next morning. The physical examination still remained negative. The lad did not seem very toxic, nor did he complain of any pain. At the examination on the third day three small pale red spots were noticed on the abdomen which had not been present the previous day. These pressed out like a "rose spot," but two of the three were at least three-sixteenths inch (5 mm.) in diameter. The temperature remained high all day, reaching 103. A leukocyte count revealed a total of 3,200 cells, with 80 per cent. lymphocytes. As a result of the low count, it was thought that the child was in all probability developing typhoid fever, and that the sudden onset with high temperature was due to the exercise on the first day of the fever. That evening he vomited after taking some food, this being the first abnormal sign or symptom excepting the fever. A blood culture was taken as well as blood for a Widal test, both of which were negative.

He was seen the next morning (the fourth day) about 9 o'clock and his temperature was down to 100. The entire trunk from the neck to the legs was covered with an extensive macular eruption. The individual lesions were from one-eighth to three-sixteenths inch (3 to 5 mm.) in diameter, rather pale pink, and in some places had coalesced. They disappeared easily under pressure, and were more often macular than maculopapular. There were only a few lesions scattered on the lower part of the face and extremities. By evening the rash had almost disappeared, and it was completely gone by the following morning. The temperature remained down after the appearance of the rash, and convalescence was uncomplicated and uneventful, except that the youngster was thoroughly knocked out by the infection and did not feel up to much for a week or ten days following.

This case, except for the age, is typical of a group of cases which we have observed in practice during the last winter. A period of high fever, lasting usually three days, is followed by the development of an eruption on the fourth day coincident with a rapid fall in temperature to the normal. The eruption, which becomes very extensive in twelve hours, fades within another twenty-four to forty-eight hours. During the febrile period there is an entire absence of all physical signs or symptoms. There is no coryza, tonsillitis, cough, bronchitis, lymphatic enlargement, splenic enlargement, diarrhea or constipation present. The most striking thing is this complete absence of symptoms accompanying the high fever. One patiently waits for the development of a concealed pneumonia or some such cause of obscure fever, when suddenly the rash appears and the temperature drops. Unless one is on the lookout for this strange complex, he will go through several anxious days.

In the last three or four years we have observed occasional instances of this peculiar complex of symptoms, but no especial attempts at studying the group was made until the fall of 1920. During the past winter and spring, however, we have seen more than twenty such cases, in eight of which a blood count was made. The latter showed, with one exception, such striking and uniform deviations from the normal as to appear to be characteristic of the disease, and to lend support to the belief that we were dealing with a definite clinical entity not recognized in any of the present textbooks. The changes in the blood picture consisted of a distinct leukopenia, with a relative lymphocytosis. This, together with the absence of all other clinical signs or symptoms, has enabled us in several instances to forecast the appearance of the rash on the fourth day of the disease. The one count (Case 7 in the accompanying table) in which no relative lymphocytosis was found was made on the fifth day, after the temperature had fallen to normal.

CHARACTERISTICS OF THE DISEASE

Two other striking features of the disease are the apparent absence of contagiousness, and its predilection for affecting infants rather than older children. The essential characteristics of the disease, as we have noted them, may perhaps best be considered in a little more detail.

Onset.—This is abrupt. Careful questioning has failed to elicit any prodromal symptoms. Usually the mother or nurse has noticed that the child has seemed feverish, and on taking the temperature has found considerable fever. The one older child in our series complained of headache and malaise on the first day.

Symptoms.—There are no symptoms except for the fever and the lassitude or depression produced by the high temperature. There is no vomiting, cough, diarrhea or pain, and the most careful physical examination in our cases has failed to discover any abnormal physical signs, such as congested ear drums, inflamed tonsils, swollen gums, lymphoid enlargement, chest or abdominal signs, or symptoms relating to the central nervous system. The postcervical glands are not enlarged. The urine has as a routine been negative. There is, as a rule, an absence of toxic symptoms and only moderate prostration. Despite the high fever, the children usually take their food well. As the fever falls to normal, the rash develops and immediately the infants seem and act as if entirely well. The older boy was somewhat irrational when his fever reached 105, but a little later he desired to get up and wanted to play or have stories read to him. The absence of toxemia with the high fever is noteworthy.

Course.—There is a striking uniformity in the course of the disease. The fever, mounting abruptly to from 102 to 104 or more, remains high, with perhaps slight

* Read before the American Pediatric Society, June 3, 1921.

morning remissions until the fourth day, when, coincident with the appearance of the rash, it falls to normal by crisis and the child acts as if quite well again. Rarely, the temperature falls on the third or fifth day instead of the fourth. Two typical temperature charts are reproduced herewith. The maximum temperature in our experience has been 104 or 105, and there is a

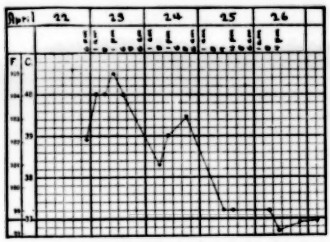

Chart 1.—Temperature in Case 1.

tendency for the fever to be 1 or 2 degrees lower in the morning than later in the day. Convalescence in our series has been uneventful without exception.

Blood.—As shown in the table, there is ordinarily a leukopenia present which may be quite striking, falling

BLOOD EXAMINATION

Case	Age	Day of Count	Temperature	White Blood Count	Lymphocytes	Polymorphonuclears	
1	10 yrs.	4th	105	3,200	80	18	Widal negative, blood culture negative
2	9 mos.	3d	104	3,200	90	7.5	
3	10 mos.	3d	102.6	6,000	88	11	
4	10 mos.	2d	103	7,000	80	12	
		5th	Normal	.....	89	11	
5	14 mos.	3d	104	8,000	..	..	Widal negative
6	15 mos.	3d	103	6,800	75	25	Widal negative
7	3½ yrs.	5th	Normal	6,600	28	72	
8	10 mos.	3d	102	6,000	88	8	

as low as 3,200 cells in two cases. In all but one of our eight cases (Case 7) there was also a relative lymphocytosis present, the lymphocytes amounting to from 80 to 90 per cent. This has caused in several cases the suspicion of a typhoid infection; but in three cases a Widal test was negative. With the exception of a relative increase in lymphocytes and relative decrease in the polymorphonuclears, the other cells apparently stand in normal relation to one another. In one case a blood culture remained sterile. Unfortunately, only one blood culture was taken, and this on the morning that the rash appeared and the temperature had fallen to normal.

Age.—Most of the cases occur between the sixth and eighteenth month. The youngest of the eight children on whom leukocyte counts were made was an infant of 9 months, and the oldest a boy of 11 years. Only two cases have been observed in children over 2 years of age. All of the other unreported cases we have seen have been in children between the ages of 6 months and 2 years.

Communicability.—In none of the reported eight cases, nor in any of the other cases observed but not reported, have we seen a second case in the same family. In Cases 3 and 5 there were two other children in the family, and in Cases 4 and 6 and 7, one other child. Not only were there two other children in Case 1 exposed, but the lad attended school the first day of his illness and no other cases developed or occurred in the school. So far as we have been able to observe, therefore, the disease seemingly does not belong to the ordinary group of exanthems in childhood transmitted by direct contact. We have never seen a second appearance of the disease in the same child.

Rash.—The eruption—the only characteristic lesion—is quite typical. It appears as the temperature falls, develops rapidly, reaching its height in about twelve hours, and then fades in another twenty-four to forty-eight hours. Desquamation is either very slight or entirely absent. In the older boy, a few (three) lesions were noted on the abdomen twenty-four hours before the rash was fully developed. The eruption is morbilliform, and consists of small, pale red macules or maculopapules, from one-sixteenth to three-sixteenths inch (1.5 to 5 mm.) in diameter. These disappear on pressure like rose spots. The lesions are usually profuse and fairly well distributed over the body, the lower part of the face, the neck and the extremities. There are usually more lesions on the trunk than on the face or extremities. The trunk from the neck to the pelvis has been so covered in some instances that a small coin would touch a number of lesions. Coalescence of lesions, giving a blotchy appearance somewhat suggestive of urticaria, was noted in a few cases. The lesions are more macular than papular, and we have frequently noted a pale areola about the macule.

DIFFERENTIAL DIAGNOSIS

Only three exanthems need be considered.

Measles.—The absence of all catarrhal symptoms and Koplik spots, the character and development of the eruption, and the noncommunicability distinguish the disease from measles. (The older boy had had both measles and scarlet fever.)

Scarlet Fever.—The absence of angina, the onset and course of the fever, the blood picture, the type and course of the eruption and absence of desquamation distinguish the disease clearly and readily from scarlet fever.

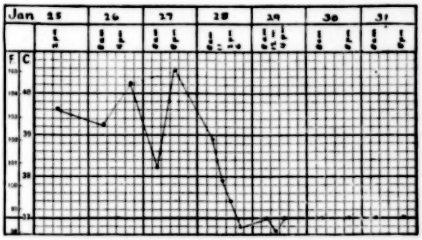

Chart 2.—Temperature in Case 6.

German Measles.—The onset, high fever, late appearance and type of the rash, and absence of postcervical adenopathy, distinguish the condition from rubella. In rubella the rash appears at the height of the fever and the temperature falls gradually. Moreover, we have a distinctly different blood picture. German measles has not been prevalent in St. Louis this winter, and the fact that the disease has not developed

in other children in the same family or in other exposed children speaks against the condition being an unusual type of rubella.

As the children were receiving no medication, there can be no possibility of a drug rash.

COMMENT

It is our belief that the syndrome is a specific entity which is not described in any of the textbooks on pediatrics or infectious diseases. The distinctive clinical course, the character and type of the eruption, the blood picture, and the noncontagious character of the condition present a clear cut picture to the clinician. Further, it is our belief that this is the same condition which was described by Zahorsky [1] of St. Louis in 1910 as "roseola infantilis" and again in 1913 as "roseola infantum." In the first paper Zahorsky described the syndrome, and in 1913 reported [2] brief histories of thirty-three cases observed during a period of three years. Only two cases were seen in children over 2½ years of age—one a child of 9 years and the second a child of 14. Zahorsky noted the period of high fever, without symptoms, lasting several days, followed by a morbilliform eruption developing as the temperature fell. His clinical description agrees with the picture we have been observing. Unfortunately, he did not report any blood counts; and in conversation he said that his attention had not been directed to a modification of the normal blood picture.

Zahorsky termed the condition roseola infantilis or infantum—a term used by some of the older authors and dermatologists in describing an indefinite exanthem of childhood. The term has been practically abandoned, as from time to time this group has been separated into different clinical entities—toxic rashes, food eruptions, rubella, etc., and, as stated, roseola infantum is no longer considered as an entity. It is difficult to gather whether or not the syndrome we have been observing is the same as that described in some of these older textbooks, owing to their meager and indefinite descriptions. We do not consider that roseola infantum is the proper name to apply to this syndrome, as the same term was formerly used to describe a large indefinite group of diseases. We therefore suggest the name "exanthem subitum" as being descriptive of the most striking clinical symptom, namely, the sudden, unexpected appearance of the eruption on the fourth day. We believe that we are dealing with a distinct clinical entity which deserves a separate place in medical nosology and a place in our textbooks of pediatrics.

We are presenting this paper with the hope that it may attract further study to the condition with the idea that its definite position may be determined.

1. Zahorsky: Pediatrics **22**: 60, 1910.
2. Zahorsky, John: Roseola Infantum, J. A. M. A. **61**: 1446 (Oct. 18) 1913.

Reliability of Wassermann Test.—A certain number of active cases of syphilis in the third or tertiary stage will give negative Wassermanns. This is especially true if the patients have had partial antisyphilitic treatment and have relapsed because the treatment was not completed. The Wassermann test is valuable as an aid to diagnosis and also as a guide to treatment, but the interpretation of its meaning should not be attempted by a person other than a physician. It is often difficult enough for a physician to estimate accurately the worth of a Wassermann test. Certainly such estimates cannot be made by a person without special knowledge of the subject.—M. Knowlton, *Pub. Health Rep.* **36**: 2310 (Sept. 23) 1921.

OBSERVATIONS ON THE CAST TREATMENT OF GONORRHEAL ARTHRITIS *

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Sir Benjamin Brodie,[1] in the first edition of his Pathology and Surgery (1818), section on diseases of joints, describes fully five undoubted cases of gonorrheal rheumatism, and to him must be accorded the credit of formulating the disease. It is generally recognized that gonorrheal arthritis is one of the most serious and damaging complications of gonorrhea occurring, according to most authorities, in from 2 to 5 per cent. of cases.

INCIDENCE

From December, 1914, to May, 1921, 517 patients suffering from gonorrheal rheumatism were admitted to the urologic service of Bellevue Hospital. These patients spent 6,741 days in Bellevue at an expense of $20,233.00 to the city of New York. Two hundred and ninety were discharged as improved; ninety-five were transfered to the Metropolitan Hospital; sixty were cured; forty left the hospital at their own risk; thirty-seven were unimproved, and five were cured by operation.

TABLE 1.—RELATIVE FREQUENCY OF JOINTS AFFECTED

Joints Affected	Number
Knee	32
Ankle	17
Hip	9
Wrist	6
Foot	5
Elbow	5
Hand	3
Shoulder	1
Spine	1
Heel	1
Costosternal	1

Between August, 1919, and May, 1921, twenty-six of the 517 patients were treated with heavy plaster-of-Paris casts. Two of the patients were girls in the children's isolation ward. These cases were consecutive and not selected; but treatment by cast was twice interrupted, once by a series of about twenty patients treated with Cano's serum and again by fifteen patients treated with sodium iodid. These methods having proved inefficacious, the treatment by casts was resumed.

Of these twenty-six patients treated by casts, eight had single joint involvement and eighteen multiple joint involvement. The relative frequency of joints affected is recorded in Table 1.

The date of occurrence of arthritis after the urethritis manifested itself is shown in Table 2; three out of four cases occurred in the first fifteen days of the acute gonorrhea.

No relapse of the rheumatism has been noted without a new attack of gonorrheal urethritis. In reviewing the past history of these patients, eight were found to have had previous attacks of gonorrheal arthritis, of these six had but one previous attack, one had four and one five previous attacks.

* From the Department of Urology, Bellevue Hospital.
* Read before the Section of Genito-Urinary Surgery, New York Academy of Medicine, May 18, 1921.
1. Brodie, M. W.: Practitioner, London **88**: 34-45, 1912.

These relapsing cases showed the following characteristics:

1. Each relapse of arthritis occurred during the acute period of a reinfection with gonorrhea.

2. Each reinfection with gonorrhea resulted in a new arthritis.

3. Regarding the joints involved at each subsequent attack of rheumatism, the large joints once affected were invariably affected during the next attack; the only difference in joint involvement being in the small joints of the hands and feet. Three patients gave a previous history of rheumatic fever and four of previous trauma of joints.

TABLE 2.—DATE OF OCCURRENCE OF ARTHRITIS AFTER MANIFESTATION OF URETHRITIS

Cases	Day After Manifestation of Urethritis
3	3rd
4	4th
3	5th
2	7th
1	8th
1	11th
1	12th
2	14th
1	15th
1	17th
1	19th
1	45th
1	60th
1	90th
1	120th

SYMPTOMS

A constant intense pain and loss of function of the affected joints is the chief complaint. The patient unusually states that for a number of nights before entering the hospital he has been unable to sleep and gets relief only by a hypodermic injection of morphin.

On admission, eighteen patients were not able to walk at all; five could walk with the support of a cane or crutch, and three were ambulatory.

DIAGNOSIS

The diagnosis is founded on the occurrence of arthritis in the course of gonorrhea. All of our patients had intracellular diplococci in the urethral smear and

TABLE 3.—DURATION OF THE ARTHRITIS ON ARRIVAL AT THE HOSPITAL

Cases	Duration of Arthritis
2	1 day
1	4 days
2	7 days
3	3 weeks
2	5 weeks
3	3 days
1	6 days
5	2 weeks
2	4 weeks
2	2 months
1	3 months

clinical symptoms of urethral or vaginal gonorrhea. As supporting evidence, the roentgen-ray findings and previous history of gonorrheal arthritis during acute urethritis are of importance.

A patient admitted to the ward suffering from arthritis is examined by the dentist and laryngologist to eliminate all foci of infection before the immobilization is started. The tonsils are removed if diseased. It was necessary to remove the tonsils of twelve patients (no focus was found in eleven cases, one patient refused operation, two were not examined). The accessory nasal sinuses are treated, if not clear, by transillumination and the roentgen ray. All teeth shown to be infected by roentgenogram are extracted.

A roentgen-ray examination of the joints involved, a Wassermann test, a complement fixation test for gonorrhea and an examination of urethral and prostatic smears are carried out as a routine procedure in every case.

TABLE 4.—PARTS AFFECTED IN RHEUMATIC FEVER AND GONORRHEAL ARTHRITIS

Case No.	Affected Part in Rheumatic Fever	Affected Part in Gonorrheal Arthritis
1	Knees, hips, ankles	Knees, hips, ankles
2	Not stated	Ankles and knees
3	Whole body	Ankles
	Previous Trauma Joints Involved	**Gonococcus Arthritis Joints Involved**
1	1910, trauma right knee	1920, arthritis right knee
2	1911, fracture right elbow	1919, arthritis right elbow
3	1914, right foot stepped on by army mule	1920, arthritis right foot, right knee, left big toe
4	1899, fracture left elbow	1919, arthritis left elbow, left foot, both ankles, both knees.

The two patients with positive Wassermann reactions received arsphenamin, together with the cast treatment. The arsphenamin apparently did not benefit them.

A leukocyte count in eleven cases showed nothing abnormal; the count ranging from 7,000 to 10,000; differential count averaged 60 per cent. polymorphonuclears and 30 per cent. lymphocytes. In nine patients, the red cell count was between 4,500,000 and 5,000,000.

TABLE 5.—REPORT OF DENTIST

	Cases
Teeth in good condition by examination and roentgen ray	18
Teeth infected; extracted	5
Teeth all extracted before admission	1
Teeth not examined	1

Many patients are sent to the ward incorrectly diagnosed as having gonorrheal arthritis, e. g., acute rheumatic fever, tuberculosis of joints, syphilitic periostitis and osteitis, gonorrheal myositis and tenosynovitis, acute infectious aneurysm, gout and focal arthritis from the teeth and tonsils.

One of the tonsillectomy patients was admitted, Dec. 18, 1919, suffering from a painful and swollen left knee, unable to walk. Gonococci were present in the urethral smear. December 23, the tonsils were removed, and December 31, the patient went home cured.

TABLE 6.—RESULTS OF EXAMINATIONS

	Cases
Wassermann negative	20
Four plus	2
Anticomplementary	2
Not taken	2
Gonococcus fix. negative	5
Four plus	11
Three plus	3
Two plus	2
Anticomplementary	4

One of the dental patients was admitted, June 21, 1920, suffering from a swollen and painful right foot which began the week before. July 7, a roentgenogram was made of the teeth and the four infected teeth were extracted. July 20, the patient felt so well that he asked to go home. The patient did not have gonorrhea.

PATHOLOGY

By roentgenogram the pathologic lesion found in the gonorrheal joints were: synovitis, twenty cases; erosion of articular surfaces, two cases; exudative arthritis with atrophy of bone, one case, and infiltration of soft tissue, no osteomyelitis, one case.

The circumference of the joint was obtained before and after the application of the cast to determine the reduction of swelling.

In eleven cases it was from 1 to 3.5 cm. (Table 7).

TABLE 7.—REDUCTION OF SWELLING

Cases	Amt. Reduc. in Cm.	Cases	Amt. Reduc. in Cm.
2	1	1	2
1	1.2	1	2.3
2	1.5	1	3.2
1	1.6	1	3.5
1	1.7		

In a like manner the circumference of the middle of the thigh and calf was measured to determine the amount of muscle atrophy. In the affected leg, it varied from 1 to 7 cm. In the nonaffected leg, it varied from 1 to 5 cm.

One of the patients with erosion of the articular surface of the femur came into the hospital suffering from rheumatism involving the knees, hips, and ankles and contracture of the adductor group of muscles of both legs. The patient had acute rheumatic fever one year before admission, involving all the joints from his waist down. He was confined to his bed for five months at that time. When he entered Bellevue Hospital, the pain and swelling from the gonorrheal arthritis were relieved by casts. When discharged at the end of seventy-three days, he still had contracture of the muscles and was just able to hobble about on crutches.

PROSTATE AND SEMINAL VESICLES

The results of examination of the prostate gland by rectal palpation in this series are given in Table 8.

The seminal vesicles were found to be palpable in ten cases; not palpable in one; slightly enlarged in eight; greatly enlarged in four; indurated in two; empty on stripping in three, and did not empty on stripping in two.

TABLE 8.—RESULTS OF EXAMINATION OF PROSTATE GLAND

Size	Cases	Consistency	Cases	Outline	Cases
Slightly enlarged	17	Indurated	10	Irregular	2
Not enlarged....	5	Boggy	2	Adherent	10
		Leathery	1	Regular	2
		Soft	1	Broad and flat..	2

The pus in proportion to the lecithin in the prostatic fluid was recorded as variable, never absent (Table 9).

Two cases of acute exacerbation of a chronic arthritis are of particular interest. Both patients had suffered for a year or so from painful toes. They contracted gonorrhea, and the chronic arthritis became so acute that they were compelled to enter the hospital. The roentgenographic report describes an erosion of the inner aspect of the head of the first metatarsal bone and first phalanx; similar gouty changes in the metatarsophalangeal joints of the other toes. The diagnosis was gouty ostearthritis. The gonorrheal arthritis was improved by immobilization; but the gout was uninfluenced.

PROGNOSIS

Prognosis of treatment by casts depends somewhat on the duration of the arthritis before treatment is started. In none of these cases has ankylosis resulted or an arthrotomy for suppuration been performed. Seventeen of the twenty-six cases in this group have been followed by return clinic for from six to twenty-two months after discharge from the hospital. No relapses have been observed.

TREATMENT

Stockman [2] says, "My experience has been that the great majority of uncomplicated cases of ordinary severity which require hospital treatment can usually be cured in from five to eight weeks."

The encouraging results obtained from the plaster treatment have been due to the heavy cast, that not only places the affected part at absolute rest but also anchors the patient to his bed. Careful attention to orthopedic principles in applying the cast is of the utmost importance. The joint above and below the one involved must be immobilized; all bony prominences and inflamed parts must be especially well padded with cotton wadding, and the plaster must not be applied too tightly over the joint lest the pressure increase the pain.

TABLE 9.—PROPORTION OF PUS AND LECITHIN IN PROSTATIC FLUID

Cases	Per Cent. of Cases	Per Cent. of Lecithin
2	95	5
2	80	10
1	75	20
1	70	30
5	50	50
1	30	50
3	25	75
1	20	70
2	10	85

METHOD OF APPLYING THE CAST

With the leg as an example and the ankle the involved joint, the method of application is:

1. With the leg in extension, the circumference of the ankle is measured, using the centers of the lateral and internal malleoli as bony "landmarks."

2. The limb is wrapped in one thickness of cotton wadding from the toes to the groin; about four thicknesses of wadding being placed over the heel, malleoli and knee.

3. A posterior splint made of eight thicknesses of 4 inch plaster bandages, extending from the gluteal fold to the tip of the toes, is molded to the conformity of the leg.

4. The assistant holds the limb with the knee in partial flexion and the ankle at right angles to the long axis of the limb.

5. Circular plaster bandages are applied to the limb at a uniform thickness of 1 cm. from the toes to the groin; the points needing extra thickness are just below the knee and above the ankle.

6. A pillow made into a roll about 12 inches in diameter is placed under the knee of the patient for at least forty-eight hours, until the cast is dry, and preferably it is left under the knee continuously, as it steadies the cast.

7. At the end of two weeks, the cast is removed. All the joints are flexed and extended several times,

2. Stockman, B. J.: Brit. M. J. 2: 1695, 1911.

care being taken not to flex the limb beyond the point at which pain is produced.

8. The leg is given an alcohol rub; the muscles are massaged; measurements are taken and the cast is reapplied for a second period of two weeks.

9. The cast is then removed; the limb is measured and massaged, and the patient is instructed to move the limb around in bed to get rid of the cast stiffness.

As soon as possible after final removal of the cast, the limb is given heat therapy by means of an electric light baking apparatus. The apparatus is essentially a semicircular piece of sheet iron, about 3 feet long, with ten 50 watt lights. Each end of the oven is covered with a blanket while the limb is being baked.

METHOD OF BAKING

The first four days, the limb is baked for thirty minutes at a temperature of 150 F.; from the fourth to the seventh day the length of time of baking is increased to one hour, the temperature raised to 200 F. and light massage started. After the first week, more active massage is used. The length of time of baking and the temperature are regulated by the patient's response to the treatment.

The patient is permitted to walk on the limb about the tenth day after final removal of the cast, beginning slowly by pushing a wheel chair about the ward.

When the spine, hips or knees are involved, the Hawley fracture table has been used in applying the spica cast; the sacrum and iliac crests being well padded with felt.

The urethral focus was not treated in this group of cases. More recently we have been injecting acriflavine, 1:5,000, into the urethra once daily. The duration of the cast treatment in one third the patients discharged was from eighteen to thirty-six days; in another third, from forty to sixty days, and in another third from sixty to eighty-one days.

After discharge from the hospital, the patients were able to resume their work in two cases in one week; in six cases in two weeks; in two cases in three weeks; in five cases in one month, and in two cases in two months.

Special mention might be made of one case of rheumatism of the spine, hips, knees and ankles. This patient presented a pitiful sight; the mere jarring of the bed would cause him to cry out with pain. He was immobilized from the axillae to the toes for one month. When discharged at the end of seven weeks he was walking well, with good functional results in all the involved joints.

One patient with arthritis of the knee was not influenced in the least by a plaster cast. He was transferred from one of the medical wards with a history of gonorrhea two years before, arthritis for the last year and one pair of intracellular diplococci in the prostatic smear. After casts failed to relieve that patient's pain, Dr. Reginald Sayre was called in consultation. Palliative treatment in the form of a Balkan frame and counterirritation by actual cautery did not improve the condition. The series of roentgenograms showed a progressive type of bone destruction, which finding, added to his clinical course, made tuberculosis a probable diagnosis. Dr. Sayre performed an arthrotomy and found a typical tuberculous lesion.

Various gonorrheal vaccines and serums, sodium iodid and typhoid vaccine were used in a series of forty-nine cases of gonococcus infection of the joints. Most of these patients were relieved from pain for from twenty-four to forty-eight hours after injection. The length of time that the patient is free from pain depends on the reaction produced. When the temperature falls to normal after the chill, the pain usually returns.

Strapping the joint with adhesive plaster and splinting the joint with boards and gauze bandage have not proved satisfactory because the joint is not adequately immobolized.

Sodium salicylate up to 120 grains in twenty-four hours has not given relief.

During the summer of 1919, a series of eight cases of seminal vesiculectomy for gonorrheal arthritis was observed. The pathologist reported histologically normal seminal vesicles in every case. Cultures from the vesicles were all sterile. On direct smear, one case showed just a moderate amount of pus cells. Three of the patients were relieved from the pain; one of the eight exhibited at return clinic an ankylosis of the wrist, six months after discharge from the hospital.

Recently one patient of the seminal vesiculectomy group was admitted to the ward with a fresh attack of gonorrheal arthritis. He has been a patient in the hospital suffering from gonorrheal arthritis every two years since 1915. He was treated with casts this time and sent on his way to return, we fear, in another two years.

CONCLUSIONS

1. The treatment of gonorrheal arthritis is an economic problem.

2. A patient suffering from gonorrheal arthritis should be warned against contracting subsequent gonorrhea.

3. In gonorrheal rheumatism, the joint involvement is usually multiple.

4. Three out of every four cases of arthritis occur within the first fifteen days after the gonorrhea.

5. Previous trauma or disease apparently is a predisposing factor of gonorrheal rheumatism.

6. Of importance in diagnosis are: (1) the occurrence of arthritis in the course of gonorrhea; (2) previous history of arthritis with an acute urethritis.

7. All possible foci of infection should be ruled out before treatment is started.

8. The cast treatment of gonorrheal arthritis seems to prevent such complications as ankylosis and suppuration.

9. Various vaccines, serums, drugs and operations on the seminal vesicles have proved inefficacious in our hands.

10. The cast treatment wholly and immediately relieves pain and cures the patient.

33 West Fifty-Fourth Street.

Function of Hospital Social Service.—A large part of hospital social service is preventive education in hygiene, sanitation, nutrition and domestic habits, all of which are vital to public health and normal life. This kind of treatment constitutes a large part of the new private practice of the physician and it has taken the place of prescribing tablets and infusions. When the health problem is caused or aggravated by a social problem so serious that no effective remedial work can be done until the latter is solved, the case should be immediately referred to a specialized agency, while the hospital social service department continues the health care. —*Hospital Social Service* 4:158 (Sept.) 1921.

THE QUINIDIN TREATMENT OF AURICULAR FIBRILLATION *

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Digitalis has been a most useful drug in the treatment of auricular fibrillation. It has been particularly effective when there was a rapid ventricular rate and a large pulse deficit. Under its influence the pulse becomes slower and more regular, owing to a lessened conductivity of the His bundle. Digitalis does not, however, alter the fibrillation of the auricles. Nor, until recently, have we known any drug which would do this. Wenckebach,[1] in 1914, reported a case in which quinin was of repeated value in terminating paroxysms of auricular fibrillation, but, in 1918, he stated that it was ineffective if the fibrillation had persisted for some time. In 1918, Frey [2] showed that quinidin, an isomer of quinin, will restore a normal cardiac rhythm to a certain number of patients suffering from a chronic fibrillation. His observations have since been confirmed by a considerable number of German clinicians and by a few in other countries.

In the present paper we wish to record our experience with quinidin in the treatment of patients having auricular fibrillation. At the same time we shall review the reports of others in order to define the methods employed, the results obtained and the possible dangers of the treatment. Eleven patients have been treated by us, in whose cases the observations have been controlled by frequent electrocardiograms. All of these, except one, were kept in the hospital during the first course of treatment. Of these eleven patients, six failed to recover a normal rhythm, although one of the six developed auricular flutter for a brief period during the treatment. Of the five remaining patients, one recovered a normal rhythm for only a brief period. In another, whose paroxysm of fibrillation had lasted two and a half days, the rhythm became regular after a very small initial dose of quinidin had been taken. The remaining three patients that were successfully treated had had fibrillation for some months, and a normal rhythm has persisted up to the time of making this report. Brief summaries of the case histories follow, the six failures being presented first.

REPORT OF CASES

CASE 1 (No. 63891).—C. W. P., a man, aged 62, with a diagnosis of chronic myocardial disease, angina pectoris and auricular fibrillation, had for ten years been conscious of his heart, and for the last year his symptoms of pain about the heart, attacks of suffocation and shortness of breath on exertion had been much worse. The ankles had been swollen for four months. Examination revealed a marked enlargement of the heart, auricular fibrillation, and a blood pressure of 170 systolic and 110 diastolic. July 6, he was given 1.2 gm. (18½ grains) quinidin sulphate; July 7, 1.2 gm. (18½ grains); July 8, 2 gm. (31 grains) and, July 9, 1.2 gm. (18½ grains). During this time the weight rose from 160½ to 161¾ pounds (72.8 to 73.5 kg.). There was no change in the heart rhythm or rate. A second course of treatment of 1.2 gm. (18½ grains) daily for six days was given in the outpatient department without effect.

CASE 2 (No. 97100).—C. H., a woman, aged 52, with a diagnosis of chronic myocardial disease, mitral insufficiency and auricular fibrillation had first observed symptoms of heart trouble, beginning with marked shortness of breath, palpitation and edema, about two years before admission. Examination revealed marked enlargement of the heart, a systolic murmur at the apex, a blood pressure of 165 systolic and 120 diastolic, and râles, with diminished breath sounds at the bases of the lungs behind. After a preliminary dose of quinidin sulphate, the patient received 1.2 gm. (18½ grains) daily for three days, without effect on the rhythm. The weight fell from 122½ to 117½ pounds (55.5 to 53.3 kg.).

CASE 3 (No. 83985).—K. S., a woman, aged 64, with a diagnosis of arteriosclerosis, myocardial disease, auricular fibrillation and achlorhydria, had a gastric complaint which began after an attack of influenza in February, 1920. In April, 1920, an electrocardiogram showed auricular fibrillation. Examination revealed a large heart, with a poorly transmitted systolic murmur at the apex. August 1, the patient received 0.6 gm. (9 grains) of quinidin sulphate; August 2, 1.2 gm. (18½ grains); August 3, 1.6 gm. (25 grains); August 4, 1.6 gm. (25 grains); August 5, 2 gm. (31 grains); August 6, 1.6 gm. (25 grains), and, August 7, 1.6 gm (25 grains). The weight fell from 177½ to 176 pounds (80.5 to 79.8 kg.). August 3, the pulse was rapid and regular. The electrocardiogram revealed auricular flutter, but this was replaced on the following day by fibrillation. Beyond this, the cardiac rhythm was not altered.

CASE 4 (No. 86117).—M. G., a woman, aged 37, with a diagnosis of mitral insufficiency, myocardial disease, fibromyoma of the uterus, artificial menopause, induced by the roentgen ray, and auricular fibrillation, had had frequent attacks of tonsillitis. Cardiac symptoms began about May, 1920, and the electrocardiogram taken in June, 1920, showed auricular fibrillation, which had been continuous. After 0.4 gm. (6 grains) of quinidin sulphate on the morning of July 6, 1921, the patient became very faint and the heart was more rapid. She was then given large doses of digitalis, and the quinidin sulphate was reduced to 0.2 gm. (3 grains) three times a day for two days. The next day she was given 1.6 gm. (25 grains), and on the following day, 0.4 gm. (6 grains). The pulse again became soft and the patient felt apprehensive, so that the treatment was discontinued. Later, in the outpatient department, she received 0.8 gm. (12½ grains) a day for a period of two weeks, without effect on the irregularity.

CASE 5 (No. 58443).—L. K., a woman, aged 61, with a diagnosis of arteriosclerosis, myocardial disease and auricular fibrillation, had had palpitation and shortness of breath on exertion for many years. In September, 1917, there was a normal cardiac rhythm, interrupted by numerous ventricular extrasystoles, and in March, 1919, a normal rhythm. The duration of her fibrillation previous to entering the hospital in August, 1921, could not be ascertained. The systolic blood pressure was constantly more than 200. In five days the patient received 20 c.c. (5½ fluidrams) of the tincture of digitalis and 9 gm. (139 grains) of quinidin sulphate, with no effect on the fibrillation.

CASE 6.—J. D. M., a man, aged 50, with a diagnosis of myocardial disease and auricular fibrillation, had had paroxysms of irregularity beginning at about the age of 23, and recurring at intervals of about once a year, until the attack which began in March, 1919. Since that time the heart had been constantly irregular. Records showed auricular fibrillation. During the week beginning August 13, the patient took quinidin sulphate, at first in daily doses of 1.2 gm. (18½ grains), and later in daily doses of 1.6 gm. (25 grains), with no effect on the fibrillation. Toward the end of the week he developed an erythematous rash and suffered from some palpitation.

CASE 7 (No. 84234).—G. P., a man, aged 67, with a diagnosis of arteriosclerosis, myocardial disease and auricular fibrillation, first came to the outpatient department in April, 1920, complaining of shortness of breath and choking spells. At this time his heart action was irregular, and he improved under digitalis. His heart trouble had forced him to give up

* This study was aided by the Felton account.
* From the Department of Medicine, Leland Stanford Junior University School of Medicine.

1. Wenckebach, K. F.: Ueber Chinin als Herzmittel, Berl. klin. Wchnschr. **55**: 521, 1918.

2. Frey, W.: Ueber Vorhofflimmern beim Menschen und seine Beseitigung durch Chinidin, Berl. klin. Wchnschr. **55**: 417, 450, 1918; Chinidin zur Bekämpfung der absoluten Herzunregelmässigkeit (Vorhofflimmern), Deutsch. Arch. f. klin. Med. **136**: 70 (April) 1921.

work in December, 1920. Records taken in March and June, 1921, showed auricular fibrillation. Examination revealed a markedly enlarged heart. The blood pressure was 218 systolic, and 110 diastolic. July 11, he received 0.6 gm. (9 grains) of quinidin sulphate and was then given 0.4 gm. (6 grains), three times a day, until noon of July 17. His heart became regular on the evening of July 16, after he had taken 6.8 gm. (105 grains) in all during six days. Except for the 0.8 gm. (12½ grains) taken on July 17, he took no more quinidin. During his rest in the hospital he had improved gradually. The change to a normal rhythm was not accompanied by any subjective sensations or by any objective improvement other than the change in rhythm. The pulse rate averaged 70, both before and after the change. The weight was not altered. The blood pressure fell slightly. The patient subsequently returned from time to time to the outpatient department. His rhythm remained normal, the last observation being made, October 31. Subjectively he felt better, having lost the sense of oppression in the chest and the orthopnea. The dyspnea on exertion was also better.

Case 8 (No. 91015).—A. B., a man, aged 35, with a diagnosis of chronic endocarditis involving the mitral and aortic valves, auricular fibrillation and syphilis, gave a history of rheumatism and repeated attacks of tonsillitis. He had had a chancre. Since the beginning of 1919, the patient had had shortness of breath on exertion. Palpitation had also been an annoying symptom. Examination revealed a markedly enlarged heart with mitral and aortic murmurs. The blood pressure was 105 systolic and 65 diastolic. The Wassermann reaction was positive. An electrocardiogram taken in March, 1921, showed auricular flutter, the auricles beating at a rate of 240. The pulse was for the most part regular, but the rate varied from approximately 120 to 80. Early in July, 1921, the pulse became very irregular and the record showed auricular fibrillation. July 18, he received 0.8 gm. (12½ grains) of quinidin sulphate, and on July 19 and July 20, 1.6 gm. (25 grains). The pulse was regular on the morning of July 20, after he had received 2.4 gm. (37 grains) in all. On the morning of July 21 the pulse was still regular, but the patient complained that he did not feel so well. Objectively he appeared distressed, his epigastrium was swollen and his liver had become distinctly larger. In two days his weight had increased from 128¾ to 134 pounds (58.4 to 60.8 kg.). Evidently, in spite of the return to a normal rhythm, compensation had become worse. He was given 12 c.c. (3¼ fluidrams) of the tincture of digitalis during the following twenty-four hours. The next morning the records showed heart block. The auricular rate was about 88 a minute. At times the ventricles followed the auricles regularly with a P-R interval of from 0.22 to 0.26 second; at other times occasional ventricular beats were dropped out; and at still other times the ventricles beat independently with an idioventricular rate of about 42 a minute. Since no heart block had been present for more than twelve hours after the final dose of quinidin sulphate, the disturbed conduction could hardly have been due to this drug alone. On the other hand, the block began after only 8 c.c. (2⅛ fluidrams) of the tincture of digitalis had been taken. Apparently this patient was unusually susceptible to this effect of digitalis. The possibility that quinidin may have been responsible for this susceptibility will be discussed later. After all medication had been discontinued the heart block gradually lessened, and disappeared within three days. The P-R interval was then 0.2 second. The patient returned occasionally to the outpatient department and was seen, October 15. The heart remained regular. The decompensation was only moderately improved.

Case 9 (No. 96877).—A. P. R., a man, aged 33, with a diagnosis of chronic endocarditis with mitral insufficiency and paroxysmal fibrillation, had had inflammatory rheumatism, in 1905; one paroxysm of irregularity, in 1918, and another in 1920, each of which lasted about forty-eight hours. The present paroxysm began, July 16, 1921, and had lasted a little more than two and a half days at the time he entered the hospital. The electrocardiogram showed auricular fibrillation. At 1:45 p. m., he received 0.2 gm. (3 grains) of quinidin sulphate, and at 2:45 p. m., 12 c.c. (3¼ fluidrams) of tincture of digitalis. At 3:30 p. m., he noticed that his heart was beating regularly, and the record showed a return to normal rhythm. He was immediately relieved of the apprehensive sensations in his chest. His heart has been regular since then.

Case 10 (No. 92992).—A. A. J., a man, aged 70, with a diagnosis of coronary sclerosis, myocardial disease and auricular fibrillation, in February, 1921, following a cold, had developed marked shortness of breath and a sense of constriction in the throat. These symptoms had persisted. Examination revealed an enlarged heart and an enlarged, not tender liver. Electrocardiograms taken in March, in May and in August showed in addition to the auricular fibrillation, a negative T in Lead I, evidence of left ventricular preponderance, a Q-R-S interval of 0.1 second in Leads I and III, and numerous ectopic beats arising in the ventricles. August 23, he received 0.6 gm. (9 grains) of quinidin sulphate, August 24, 1.2 gm. (18½ grains), and August 25, a single dose of 0.4 gm. (6 grains). In all, 2.2 gm. (34 grains) was given. Records taken on the afternoon of August 24, and during August 25 showed a sinus rhythm interrupted by numerous ventricular extrasystoles. On the morning of the 26th, records showed a return of the auricular fibrillation. On account of the poor general condition, which had not changed during his stay in the hospital, it was decided to give the patient digitalis and to repeat the quinidin at a later date. August 26, he received 16 c.c. (4⅓ fluidrams) of tincture of digitalis and August 27, 4 c.c. (65 minims) more. The general condition remained much the same until the early morning of August 28, when, after going to the toilet, he developed an acute decompensation, from which he died eighteen hours later. Necropsy disclosed coronary sclerosis and a dilated heart.

Case 11 (No. 81564).—W. J. S., a man, aged 38, with a diagnosis of chronic endocarditis involving the aortic and mitral valves and auricular fibrillation, gave a history of rheumatism and, between March and November, 1920, occasional attacks of dyspnea. Since November he had been weak and short of breath and had had considerable palpitation. He was treated at the San Francisco Hospital in May, 1921, at which time his heart was markedly irregular. August 23, he received 0.6 gm. (9 grains) of quinidin sulphate, and, August 24, 1.2 gm. (18½ grains). The pulse was regular on the morning of August 25, and the quinidin was discontinued. The patient showed a remarkable improvement following the restoration of the regular rhythm. Previously, despite prolonged and well directed digitalis treatment, he was unable to walk even slowly without discomfort, he had considerable gastric distress after eating, and he had frequent paroxysms of dyspnea at night, of an asthmatic character. During the treatment he lost more than 5 pounds (2.3 kg.) in weight, and all the troublesome symptoms became less marked. When seen a week later he said he could climb ordinary stairs and hills without excessive dyspnea and could eat without discomfort. He slept well and his extremities were no longer cold. The liver which had been at the level of the umbilicus could no longer be felt. These conditions were also present up to October 13.

THE RESTORATION OF A NORMAL RHYTHM

We have seen that five of our eleven patients recovered a regular sinus rhythm, but that in one case this continued for only a short period of time. The results obtained by others are presented in the accompanying table.

Of factors which seem to influence the restoration of a normal rhythm, the most important appears to be the duration of the fibrillation. As we have pointed out, Wenckebach came to the conclusion that quinin was effective only in the paroxysmal type of fibrillation. While quinidin appears to be more effective than quinin, it too is more effective when the fibrillation is of recent onset. Frey states that in his series the normal rhythm was restored in thirteen of twenty-four patients who had been suffering from fibrillation less than a year; whereas it was restored in only five of nineteen patients in whom the fibrillation had lasted

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more than a year. Haass remarks that his failures were chiefly among those who had been suffering from fibrillation for a long time. Among our cases the duration of the fibrillation was estimated thus: in cases of unfavorable outcome, one year, two years, eighteen months, fourteen months, and two and a half years; of favorable outcome, fifteen months, two months, preceded by flutter, three days, six months, and ten months.

Age does not seem to influence the results. The type of lesion appears to be of less importance than the degree of decompensation. Frey states that among his cases decompensation and dilatation of the auricles both affected the results unfavorably. Benjamin and Kapff state that the degree of decompensation noted when the patient is first seen is of less importance than the degree of compensation to which the patient can be brought by treatment. For this reason they strongly urge a preliminary course of digitalis and rest before the administration of quinidin.

The size of the dose necessary to restore the normal rhythm has varied to an extraordinary degree. Jenny states that in one patient normal rhythm was restored

CASES OF AURICULAR FIBRILLATION TREATED WITH QUINIDIN

Author	Number of Cases	Normal Rhythm Restored	Recovering a Normal Rhythm Per Cent.	Maximum Dose per Day Advised Gm.	Grains
Frey	50	21	42	1.2	18½
Bergmann	9	6	67	2.0	31
Wybauw	25	14	56	1.5	24
Klewitz	13	1	8	1.0	15½
Weisser	11	4	35	...	..
Boden and Neukirch	17	6	35	2.0	31
Haass, H.	44	27	61	0.8	12½
Benjamin and Kapff	27	18	67	2.0	31
Jenny	18	17	94	3.0	46½
Levy	4	2	50	1.2	18½

after 0.5 gm. (8 grains) of the drug was given, whereas another patient took 15.5 gm. (240 grains) during the course of ten days before restoration occurred. In Case 9 of our series the patient recovered from the paroxysm after taking 0.2 gm. (3 grains) of the drug, and one may well question whether he would not have recovered equally soon had none been taken. An inspection of the table reveals that Haass obtained excellent results with small doses. If we disregard his report, the value of results obtained paralleled the size of the doses employed. Jenny, who obtained a remarkable number of successes, did not hesitate to use very large doses, while Klewitz with his poor results used small doses. Furthermore, De Meyer states that he obtained no result when he used 0.75 gm. (11½ grains) daily for three days.

DURATION OF NORMAL RHYTHM

When one recalls that the paroxysmal type of auricular fibrillation is essentially a recurring condition which tends in time to become permanently fixed, it is not surprising that relapses occur after the normal rhythm has been reestablished by the use of quinidin. In our small series, one patient relapsed within forty-eight hours, while the others have maintained a regular rhythm during a period of observation of from two to four months. Frey states that in his series of compensated cases four patients relapsed within a week and seven maintained a regular rhythm for more than a month. Jenny states that, at the time of his report, the rhythm of one of his patients had been regular for five months. Boden and Neukirch state that of seven cases in which the rhythm became regular, in only one did it remain so for as long as nine months, when this patient also relapsed. Obviously, we may expect a relapse after a successful treatment; but it is too early as yet to define the maximum length of time that a patient may remain free from a recurrence of the fibrillation.

THE EFFECT ON DECOMPENSATION

One should distinguish clearly the immediate effect of quinidin from the effect which eventually follows the restoration of a normal rhythm. Quinidin, like quinin, appears to be a cardiac depressant. Any improvement in circulation is apparently due to the restoration of a normal rhythm and is therefore an indirect effect of the drug. Furthermore, the degree of improvement depends on the degree to which the symptoms and the decompensation were dependent on the irregularity itself. Experience with paroxysmal fibrillation indicates that in some cases at least such symptoms as palpitation, precordial distress and dyspnea become worse during the period of irregularity. This is particularly true if the ventricular rate is very rapid during the paroxysms. In such cases the restoration of a normal rhythm might be expected to remove many of the troublesome symptoms. In other cases, and especially in those in which there is a moderately slow and not very irregular pulse, the conversion to a regular rhythm could hardly be expected to make much difference. Finally, when symptoms depend less on the irregularity than on changes in the heart muscle or valves, they would not be much altered by a change in rhythm.

The effect on decompensation of a restoration of the normal rhythm by quinidin has, in fact, varied greatly in different cases. Boden and Neukirch state that they have not observed a favorable effect on decompensation, and that two patients became worse, with a lessened diuresis. On the other hand, one of Bergmann's patients showed a remarkable improvement. Most authors state that their patients usually felt subjectively improved when regular rhythm had been restored.

In Case 10 of our series, no appreciable subjective or objective improvement accompanied the change to a normal rhythm. In the other four cases, definite subjective improvement, accompanied by more or less objective improvement, followed restoration of a normal rhythm. All experienced relief from the palpitation and the discomfort about the precordium. In Case 11, there was, in addition, a striking improvement in compensation. The patient had previously been thoroughly treated with digitalis and had been taking digitalis more or less for months. Despite this, he was almost totally incapacitated, with marked shortness of breath on exertion, edema and swollen liver. Following restoration of normal rhythm all signs of marked decompensation disappeared, and the patient stated that he was better than at any time since the onset of his serious cardiac symptoms, about a year before. In Case 8, the decompensation increased during the administration of quinidin. The dyspnea became worse, the liver became distinctly larger, and the patient gained 5 pounds (2.3 kg.) in weight in a few days. Following 12 c.c. (3¼ fluidrams) of tincture of digitalis all medication was withrawn, and the patient subsequently felt better than he had before the treatment had been instituted.

METHOD OF ADMINISTRATION

Some patients appear to be unusually susceptible to quinidin. For this reason a small preliminary dose is recommended for the first day. We usually gave 0.2 gm. (3 grains), three or four times, the first day. After this we gave 0.4 gm. (6 grains), three times a day, and later gradually increased to 0.4 gm. (6 grains), four or five times a day. We did not exceed a total of 2 gm. (31 grains) in twenty-four hours. Most authors place the maximum at this or a lower level, but Jenny states that one may increase the dose to 3 gm. (46½ grains) in twenty-four hours.

The return to normal rhythm has occurred most frequently on about the third day of full treatment. After the fifth day, few cases have become regular, although occasionally this has happened as late as the tenth day. The first course of treatment, therefore, should last about a week. If this fails a second course may be given, later. The latter is usually begun without the preliminary small doses. Occasional patients have become regular during the second course of treatment when the first had failed. If the normal rhythm is reestablished, the quinidin has usually been withdrawn by gradually diminishing the dose. In our cases it was withdrawn abruptly. When relapses were frequent, they were avoided in some instances, by giving the drug regularly for an indefinite period of time.

An important question, to which no final answer can yet be given, concerns the combination of digitalis and quinidin medication. In many ways the two drugs appear to be antagonistic. Particularly pertinent to the present discussion is the fact that large doses of digitalis frequently convert an auricular flutter into a fibrillation; whereas, under the influence of quinidin, the change from fibrillation to a normal rhythm has in a number of instances shown an intermediate stage of flutter. Frey advises against the combination of quinidin and digitalis, and his advice appears to have been generally followed. In two of our patients, the palpitation, increased heart rate and poor quality pulse which developed during the administration of quinidin were promptly relieved by digitalis. We are inclined to think, however, that the administration of digitalis may have lessened their chances for recovering a regular rhythm. The occurrence of heart block after both drugs have been given will be discussed later.

According to Frey, marked decompensation lessens the chances for recovering a normal rhythm. Patients with such a marked decompensation should first be given the usual treatment for decompensation, including digitalis. After allowing time for some of the digitalis effect to disappear, quinidin treatment may be instituted.

UNTOWARD RESULTS

Many patients recover a normal rhythm with no disagreeable or alarming symptoms. In our experience and in the experience of others, loss of appetite with perhaps slight nausea or even vomiting, palpitation, increased heart rate, and a small and soft pulse are not uncommon effects of the drug. Since recovery of a normal rhythm may be preceded by increased heart rate, either regular or irregular, together with palpitation and some precordial distress, Benjamin and Kapff, as well as others, have advised that these symptoms be disregarded. Too great caution at this stage of treatment may lessen the chances of restoring a normal rhythm.

More serious symptoms may occur either with or without warning. One of our patients with palpitation, increased heart rate and precordial uneasiness, fainted when she sat up. Alarming collapse has been recorded several times. One of Haass' patients, who had taken 2.8 gm. (43 grains) of quinidin in three and a half days, suddenly became pulseless and cyanotic, and stopped breathing; after which a regular rhythm set in. Frey records two cases in which the respirations stopped.

Several fatalities have been reported. In none of these was the drug clearly responsible for the death. Nevertheless, in view of the fact that quinidin may at times cause alarming symptoms or may lessen compensation, one hesitates to assert that it could not contribute to a fatal issue. In both of Bergmann's fatal cases, the heart was badly decompensated, and neither patient received large doses of the drug. One died four days after the quinidin had been stopped, the other shortly after a relapse to fibrillation and a repetition of the drug administration. In one of Benjamin and Kapff's fatal cases, the patient had a serious decompensation and received in all 4.8 gm. (84 grains) of quinidin. Death occurred from bronchopneumonia, four days after stopping the drug. Their second patient had fair compensation. She received small doses of quinidin (apparently 0.8 gm. [12 grains] in all), but reacted to even small doses, with palpitation and precordial distress. Shortly after becoming regular, the heart suddenly stopped, and the patient died. In our fatal case, the patient had poor compensation and the electrocardiogram showed evidence of serious myocardial disease. He received in all 2.2 gm. (34 grains) of quinidin sulphate during the course of three days. He died more than three days after the last dose and seemed in his usual condition until eighteen hours before his death. At this time he developed an acute dilatation following a visit to the toilet. Necropsy revealed coronary sclerosis with cardiac hypertrophy and dilatation. None of the patients in the fatal cases received large doses of quinidin. In four of the five the heart was badly decompensated and apparently had serious myocardial disease. At most quinidin was only a minor factor in contributing toward the fatal result. The sudden death of one patient in fairly good compensation shortly after the establishment of a normal rhythm is not easily explained, and no necropsy was permitted in the case. Should further deaths of this type be reported, the field of usefulness of quinidin will be restricted.[3]

In Case 8 of our series, the patient developed a transient heart block. He received in all 4 gm. (62 grains) of quinidin sulphate and was then given digitalis on account of an increase in the decompensation. The block developed after 8 c.c. (2 1/6 fluidrams) of digitalis tincture had been taken. So far as we could determine, no digitalis had been taken shortly before the patient entered the hospital. We have not discovered other reports in the literature of heart block after quinidin medication, and we would be inclined to regard this as a coincidence were it not for two facts. In the first place, the administration of large doses of quinidin to animals has caused block, and on the basis of such experiments Schott specifically warns against the combination of quinidin and digitalis. In the second place, one of us has seen in consultation a patient

3. Since this article was written, a patient in fairly good compensation was treated with quinidin and died suddenly shortly after his heart had become regular.

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who had had auricular flutter and who had received for some time a combination of digitalis and quinidin. When seen, he was having periods of complete heart block associated with the Stokes-Adams syndrome, between which the rhythm was normal. A few weeks after withdrawal of the medicine, these attacks disappeared.

CONCLUSIONS

1. Quinidin will restore a normal heart rhythm in a certain proportion of cases of auricular fibrillation.

2. Recent onset of the fibrillation favors restoration of a normal rhythm.

3. With return to a normal rhythm the general condition of the patient is frequently improved, and occasionally there is a very striking improvement even when digitalis has failed to maintain compensation.

4. On the other hand, quinidin may in certain cases produce alarming symptoms and may, during its administration, have an unfavorable influence on compensation.

5. In view of the possible dangers associated with its administration to cardiac patients, quinidin should be given only after decompensation has been treated by other methods, after an exact diagnosis of the cardiac condition has been made, and when the patient is kept under careful observation.

6. Combinations of quinidin and digitalis should probably be avoided.

EFFECTS OF THE ADMINISTRATION OF QUINIDIN SULPHATE IN AURICULAR FIBRILLATION *

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This report is presented as a preliminary study of "the action of quinidin sulphate upon the fibrillating auricles, an action but recently discovered and perhaps one of the most remarkable and dramatic which is now known to therapeutics." [1] The reader's indulgence is requested for the scattered nature of this report, which is due to the rather brief period in which this study was made.

Quinidin is one of the four better known alkaloids of cinchona bark: namely, quinin, quinidin, cinchonin and cinchonidin, quinidin being the dextrorotatory stereoisomer of quinin.

Quinin, "das Opium des Herzens," has been used by the older physicians for many years for its sedative action on the heart. It is stated that Skoda [2] first recommended its use in heart disease. Its introduction into the therapy of auricular fibrillation dates from 1914, when Wenkebach [3] described its administration in a Dutch merchant suffering from auricular fibrillation. This man, living in, and acclimated to, the Dutch colonies, was accustomed to take quinin for malaria and other ills and found that, curiously enough, it also controlled his periodic heart attacks. Frey,[4] in 1918, following experimentation with various cinchona bark alkaloids, found that quinidin was less toxic and more effective than any of the others, and, because of the better solubility of quinidin sulphate, advocated its use rather than the pure alkaloid. Since his publication, a rather extensive literature on the action of quinidin has appeared.[5]

The present report deals with seven cases of chronic auricular fibrillation, one case of paroxysmal auricular fibrillation, and one of auricular paroxysmal tachycardia.[6] In each case, 0.2 gm. (3 grains) of quinidin was administered the first day as a preliminary idiosyncrasy test. The second day, 0.4 gm. (6 grains) was given at 8, 12, 4 and 8 o'clock, and continued daily thereafter, until either a normal cardiac mechanism resulted, until sufficient had been given in the refractory cases to make it clear that no such effect could be obtained, or until some signs of intoxication had been produced. Electrocardiographic tracings were made as a control and at varying intervals thereafter to study its effects. Careful daily bedside notes of symptoms and physcial and laboratory findings were made. Of the eight cases of auricular fibrillation, four responded with the development of a normal cardiac mechanism (sinus rhythm) and four remained unaffected. I shall discuss the latter group first.

In general, it may be said that these four patients all suffered with moderately advanced, or advanced heart failure, as shown by such findings as generalized edema, cyanosis and orthopnea. Three of the four improved under digitalis. They varied in age from 13 to 50 years. Two were cardiorenal cases with hypertension, one a mitral stenosis, and one a postinfectious myocarditis. The maximum dose given was 24.4 gm. (376½ grains) over a period of three weeks. Quinidin and digitalis were given in various combinations: simultaneously, digitalis first, followed by quinidin, and vice versa. By no method was it possible to restore a normal cardiac mechanism in any patient suffering with advanced circulatory failure. As far as could be ascertained, no untoward effects were experienced except possibly in Patient H. S., who suffered from advanced heart failure with right bundle branch block, whose decompensation over a period of many months had failed to respond to digitalis.

The cases in which a normal cardiac mechanism was established are as follows:

CASE 1.—A woman, aged 45, suffering from mitral stenosis of eight years' duration with early heart failure, developed a sinus rhythm after 1.8 gm. (28 grains) of quinidin (Fig. 1). Up to the present time the sinus rhythm has persisted approximately four months, the latter three of which have transpired without further administration of the drug. It is interesting to note that, with the establishment of the sinus rhythm, both the evidence of right preponderance and the slight suggestion of early heart failure disappeared. She states that, since the restoration of the normal heart beat, she has felt somewhat better.

CASE 2.—A man, aged 70, suffering with general atherosclerosis, chronic myocarditis, diabetes mellitus and auricular fibrillation, secured a sinus rhythm after 1.8 gm. (28 grains) of quinidin, lasting ten days without quinidin. Sometime between the tenth and the nineteenth day thereafter he experienced a relapse to fibrillation. A second sinus rhythm, secured after 3.2 gm. (49½ grains) of quinidin, persisted fourteen days with 0.4 gm. (6 grains) daily, but fibrillation

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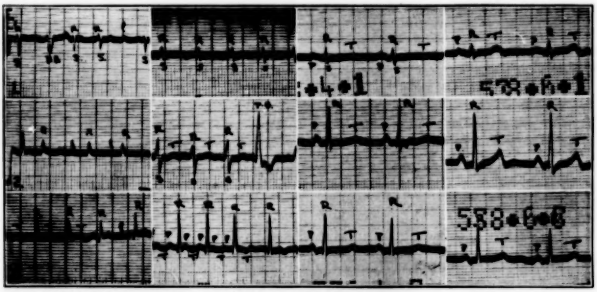
* Read before the Chicago Society of Internal Medicine, Oct. 24, 1921.
* From the Medical Services and the Electrocardiographic Laboratory, Michael Reese Hospital.

1. Lewis, Drury, Iliescu and Wedd: Brit. M. J. 2: 514 (Oct. 1) 1921.
2. Skoda, quoted from Romberg: Krankheiten des Herzens, Ed. 3, 1921, p. 384.
3. Wenkebach: Die unregelmässige Herztätigkeit und ihre klinische Bedeutung, Leipzig, Engelman, 1914.
4. Frey, W.: Ueber Vorhofflimmern beim Menschen und seine Beseitigung durch Chinidin, Berl. klin. Wchnschr., 1918; Weitere Erfahrungen mit Chinidin bei absol. Irregularität, Ebenda, 1918.
5. Compare Levy, R. L.: Restoration of the Normal Cardiac Mechanism in Auricular Fibrillation by Quinidin, J. A. M. A. 76: 1289 (May 7) 1921.
6. Because of the securing of additional cases, it was decided that the case of paroxysmal tachycardia be reported at a later time.

recurred after three weeks without quinidin. Since this time, no further quinidin being given, his fibrillation has persisted.

CASE 3.—An assembler, aged 43, suffering with mitral stenosis, auricular fibrillation of two years' duration and recurrent heart failure, developed a sinus rhythm with auricular extrasystoles after 3.2 gm. (49½ grains) of quinidin (Fig. 2). In the transition between the irregular and regular pulse, after 2.4 gm. (37 grains) of quinidin had been given, clear evidence of the retardation of the auricles and the development of impure flutter may be seen. This patient suffered many recurrences of fibrillation as soon as the drug was stopped, followed by as many restorations of sinus rhythm with varying amounts of quinidin. He received in all 8.2 gm. (126½ grains) of quinidin while in the hospital, and 8.4 gm. (129½ grains) as an ambulatory patient.

CASE 4.—A life insurance agent, aged 58, with distinct signs of exophthalmic goiter and a metabolic rate of 45 plus, has experienced, in the past two months, three attacks of periodic heart irregularity, which electrocardiographic tracings have shown to be paroxysmal auricular fibrillation. As the last attack persisted somewhat longer than the earlier ones, and because of the increasing severity of the thyroid symptoms, he entered the hospital for treatment and, after 1.4 gm. (21½ grains) of quinidin sulphate, a return to his normal heart rate was experienced.



June 28, 1921 Quinidin, 0.2 gm.; right preponderance; rate, 136. | June 29, 1921 Quinidin, 1.2 gm.; rate, 140. | June 30, 1921 Quinidin, 0.4 gm.; sinus rhythm; rate, 62; disappearance of right preponderance. | July 7, 1921 No quinidin for one week; sinus rhythm; rate, 58.

Fig. 1 (Mrs. I. B., aged 45).—Mitral stenosis, early heart failure, auricular fibrillation; establishment of sinus rhythm and compensation with small amount (1.8 gm.) of quinidin, persisting four months (last examination), three weeks without quinidin.

No serious mishaps occurred in the observation of these "successful" cases. Various of these patients complained at different times of nausea, vertigo, transitory weakness, headache and tinnitus aurium. Two of them believed they had less cardiac palpitation, were more comfortable, and experienced improved sleep and appetite with the establishment of a sinus rhythm. Two noticed no change. Most of them developed an early tachycardia of from 20 to 25 beats over their previous pulse rate and, subsequently, a bradycardia of from 45 to 55 with the establishment of a regular pulse. Two developed auricular and ventricular extrasystoles. The total urinary output in three patients was increased.

COMMENT

The mechanism and significance of the restoration of the normal heart beat is of surpassing interest in this action of quinidin sulphate. Santesson,[7] in 1893, and F. B. Hofmann,[8] in 1915, have shown that quinidin depresses the rhythmicity, contractility and irritability of the heart. Boden and Neukirch,[9] working with the perfused, isolated rabbit and fetal heart, showed that quinidin slows the heart rate, causes paralysis of the auricle, shortens the auriculoventricular interval, and results finally in paralysis of the ventricle.

While these earlier views are interesting and valuable, perhaps the most clarifying work on this fascinating action of quinidin is that recently presented by Lewis and his co-workers. Drury and Iliescu [10] show clearly, by taking sternal leads, that a progressive retardation in the auricular rate is obtained from the two hourly administration of quinidin, an initial rate of 450 being reduced to 200. During this retardation, the small, frequent, fibrillary waves change to the slower, larger ones of impure flutter. As the auricles are slowed the ventricular rate rises, owing to a decrease in the auriculoventricular block.

The explanation of this tachycardia, which we also noted in our cases, was foreshadowed by Frey.[11] Lewis believes that the maximum effect from any one dose of quinidin is obtained two hours after the dose, so that if a longer interval is allowed to elapse between dosages the maximum effect is lost. The actual point of attack of quinidin on heart muscle is explained by Lewis on the basis of his theory of circus movements. He believes that it affects both the refractory period and the conduction time of the circus wave, and that if the gap between the crest and wake of the reentrant wave is narrowed and finally closed, fibrillation will cease and the pacemaker again regain control. The maintenance of the gap depends on the balance between the refractory period and conduction time. As they are mutually opposed and both slowed by quinidin, the end-result, the persistence of fibrillation or the restoration of sinus rhythm depends on which effect dominates.

SUMMARY

Summarizing briefly my experiences from this rather limited number of cases, I feel it should be strongly emphasized that, for the present, quinidin sulphate is primarily of use in studying the mechanism of fibrillation of the auricles. I therefore believe it desirable to sound a warning against the use of quinidin as a general therapeutic procedure for the treatment of various types of disorderly heart rhythm. When it is used, it should be considered a problem of clinical investigation, with careful observations and controls and judicious use in the question of dosage.

Quinidin, apparently, is not without danger, as witness the reports from various observers of sudden collapse—syncope, apnea and pulselessness—and the

7. Santesson: Arch. f. exper. Path. u. Pharmakol. **32**: 327, 1893.
8. Hofmann, F. B.: Die Wirkung einiger anorgan; Salze und des Chinins auf die Tätigkeit des Säugetierherzens, Ztschr. f. Biol. **66**, 1915.
9. Boden and Neukirch: Deutsch. Arch. f. klin. Med. **136**: 181, 1921.
10. Drury and Iliescu: Brit. M. J. **2**: 512 (Oct. 1) 1921.
11. Frey, W.: Deutsch. Arch. f. klin. Med **70**: 136, 1921.

recent warning of Mackenzie [12] and Orr [13] as to the danger of emboli from the setting free of small clots of blood which have formed during the abnormal state of the auricle during fibrillation and flutter, and which may be set free in the circulation when the auricle resumes its normal systole.

Another interesting problem which this work raises is the explanation why the cases of fibrillation with associated advanced heart failure fail to respond. At present all one can say is that the myocardial changes in heart muscle failure are so profound and widespread that the pacemaker is permanently unable to secure dominance over the auricle, even with the assistance of this powerful drug. In this relation, the literature contains one or two interesting examples of the reestablishment of compensation, without the use of digitalis, at the time of the restoration of the normal mechanism by quinidin. Von Bergmann,[14] for example, cites a particularly striking example. My first case, Mrs. I. B., is a pertinent one, evidence of improvement of compensation being noted both clinically and electrocardiographically with the onset of sinus rhythm.

The explanation why, in certain cases, the restored sinus rhythm persists, and in others does not, is likewise wanting at the present time. The suggestion lies near at hand that the first group, those which persist, are merely examples of paroxysmal fibrillation, cases which will develop a sinus rhythm simultaneously with rest in bed or with no special method of treatment. There is little to be said against this view, and the conclusion as to the actual therapeutic effect of the drug in any given case is difficult to reach, a difficulty similar to the evaluation of the therapeutic effect of many medical measures.

Does chronic auricular fibrillation jeopardize a patient's health or shorten his life? Is it necessarily an undesirable phenomenon, and should measures of any kind, quinidin or other drugs, be administered for its control? I have in mind several patients whom I have watched for quite a few years, who have a persistently irregular pulse, with no other signs of cardiac disturbance. Should an attempt be made with them to restore their sinus rhythm and, if it is restored, will they live longer, be more comfortable and work more efficiently? Mackenzie cites the case of a man, aged 60, with an auricular fibrillation who consulted him fifteen years before, who was told not to worry and to lead his normal life, and that he needed no treatment. This patient did so and today is alive and well. I believe that such questions can only be answered by following a large number of cases over a considerable number of years, and that many more clinical observations and statistical studies of fibrillation, with and without quinidin, must be made before even an attempt at answering this and related questions may be undertaken.

Finally, the criticism that restoring the normal rhythm with quinidin does not of itself effectively treat the basic cause of the irregularity, I fully agree with. My last case of recurring paroxysmal fibrillation, one of the findings in the general picture of a Basedow complex, is a moot case. Nevertheless, accumulated and extended experience and careful study will ultimately portray the confines of these disease problems, much more fundamental than fibrillation itself.

12. Mackenzie, J.: Brit. M. J. 2: 576 (Oct. 8) 1921.
13. Orr, J.: Brit. M. J. 2: 576 (Oct. 8) 1921.
14. Von Bergmann: Zur Chinidintherapie des Herzens, München. med. Wchnschr., 1919.

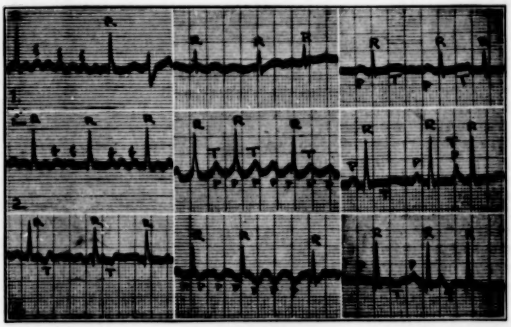
CONCLUSIONS

1. Quinidin sulphate has been administered in seven cases of chronic auricular fibrillation and one case of paroxysmal auricular fibrillation.

2. Four cases of chronic auricular fibrillation, with advanced heart failure, failed to respond to quinidin with the establishment of a normal sinus rhythm.

3. In three cases of chronic auricular fibrillation, without advanced heart failure, the normal cardiac mechanism was restored with varying amounts of quinidin. In one case the restoration was permanent (four months). The other two cases relapsed to fibrillation at varying intervals after quinidin was discontinued.

4. The case of paroxysmal fibrillation under quinidin showed distinct periods of shortening of the duration of the paroxysms, and gave evidence of prevention of recurrences during its administration.



June 20, 1921
No quinidin; auricular fibrillation; rate, 72.

June 23, 1921
After 2.4 gm. of quinidin; auricular flutter; rate, 103.

June 24, 1921
After 3.6 gm. of quinidin; sinus rhythm; auricular extrasystoles.

Fig. 2 (J. M., aged 43).—Mitral stenosis, auricular fibrillation: establishment of sinus rhythm with quinidin; frequent recurrences of fibrillation; development of auricular flutter in transitions.

5. In the transition between fibrillation and sinus rhythm, in the successful as well as the unsuccessful cases, a moderate tachycardia, retardation of the auricular rate and evidences of impure flutter were found. Synchronously with the establishment of sinus rhythm, a bradycardia of varying intensity has been noted.

6. The action of quinidin in fibrillation is a fascinating problem, extremely complex, worthy of further study and not without untoward effects to the patient. Questions of exact mode of action, therapeutic value, dosage, indications and contraindications in practice must be reserved for wider knowledge.

Small Hospital.—The small or isolated hospital problem is the problem of forming the lines of communication to 6,000 hospitals scattered throughout the country away from the large centers of population, that each may know of the other's policies, that each may get the help needed on its special problem when it is needed.—A. R. Warner.

CLINICAL EXPERIENCE WITH QUINIDIN IN AURICULAR FIBRILLATION *

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AND
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Within the last few years, the alkaloid quinidin has been found to have the power of stopping, at least temporarily, the common disturbance of cardiac mechanism, called auricular fibrillation, in about one-half the cases in which it has been tried. The method of administration and dosage of quinidin have varied considerably. In general, oral administration of quinidin, or quinidin sulphate, in doses of 0.2 to 0.5 gm. (4 to 8 grains) has been the practice. The total daily dosage has generally been from about 1 to 1.8 gm. (15½ to 28 grains), although Faber [1] has given as much as 3.5 gm. (54 grains) in a day. Hecht [2] gave quinidin intravenously, as did also Boden and Neukirch.[3] Our practice has been as follows: The patient is given a preliminary probatory dose of 0.2 gm (3 grains), and this is repeated once after two hours. If no symptoms of hypersusceptibility to the drug develop, the therapeutic administration of the drug is begun on the following day. Headache, nausea, faintness, flushing, tachycardia, palpitation or mental symptoms, developing after the test doses or during the treatment, call for increased care in administration and occasionally for temporary discontinuance of the drug. During the period of therapeutic administration, the patient receives from 1 to 1.6 gm. (15½ to 25 grains) of quinidin a day, in from three to five divided doses. Owing to the rapid elimination [4] of the drug, there is no cumulative effect, and the treatment can be continued for a week or more with safety. It should be emphasized that with the precaution of testing every patient with two probatory doses, and not forcing the quinidin when it is not well tolerated, we have had none of the alarming symptoms reported in the literature, i. e., cessation of respiration, unconsciousness or pulselessness.[5]

We have collected all the published cases from the medical literature that was available to us, and we have summarized the results of the treatment in the accompanying table. A detailed record of six of the twenty-two unselected cases of auricular fibrillation in which we have used quinidin treatment is given herewith.

REPORT OF CASES

CASE 1.—A woman, aged 54, had had auricular fibrillation continuously since May, 1919, i. e., for more than two years. There were hypertension, some cardiac hypertrophy but no evidence of any valvular defect. Several electrocardiograms showed auricular fibrillation. Quinidin therapy was started, June 21, 1921. The first day, two probatory doses of 0.2 gm. (3 grains) were given. On the second and third days, five doses of 0.2 gm. (3 grains) were given. On the fourth day after the second dose of 0.2 gm. (3 grains), the heart rhythm was found to be regular. An electrocardiogram was taken and showed normal rhythm. No more quinidin was given. The heart rhythm continued to be regular, and the last electrocardiogram, taken Oct. 5, 1921, still showed normal rhythm. The total amount of quinidin given was 2.8 gm. (43 grains).

CASE 2.—A woman, aged 41, suffering from mitral stenosis and insufficiency, with a rheumatic history, was known from electrocardiographic evidence to have had auricular fibrillation since June, 1920. Quinidin therapy was started, May 21, 1921. The first day, the usual two probatory doses of 0.2 gm. (3 grains) were given. The second day, five doses of 0.2 gm. (3 grains) were given. An electrocardiogram showed a change in the mechanism from auricular fibrillation to auricular flutter. On the third day, after two more doses of 0.2 gm. (3 grains), the heart rhythm was found to be regular. This was confirmed by electrocardiogram. No more quinidin was given. Frequent electrocardiograms throughout the next five months showed persistence of normal rhythm and no recurrence of fibrillation. The total amount of quinidin given was 1.8 gm. (28 grains). An interesting feature of this case was the fact that the diastolic murmur of mitral stenosis with fibrillating auricles developed a presystolic accentuation after normal rhythm had been restored.

CASE 3.—A man, aged 43, with no previous history of cardiac disease, had been struck by an automobile three weeks before observation, being only slightly injured but greatly frightened. He soon began to complain of palpitation, weakness and precordial distress. An electrocardiogram taken May 5, 1921, showed auricular fibrillation. The patient was treated for ten days with rest in bed and no drugs; but the fibrillation, as shown by repeated electrocardiograms, persisted. May 15, quinidin was started; and after two doses of 0.2 gm. (3 grains) each, normal rhythm returned. The patient left the hospital a week later with no recurrence of fibrillation and no evidence of any cardiac disability. It is noteworthy that the return to normal rhythm took place after only 0.4 gm. (6 grains) of quinidin.

CASE 4.—A woman, aged 30, with a double mitral lesion of unknown etiology had had auricular fibrillation for at least one month previous to treatment. April 4, 1921, two doses of 0.2 gm. (3 grains) of quinidin were given. The following day, 1.2 gm. (18 grains) was given; and on the third and fourth days, 0.8 gm. (11 grains) was given. An electrocardiogram then showed normal cardiac rhythm, after a total dosage of 3.2 gm. (50 grains) of quinidin. May 10, fibrillation recurred, and 0.6 gm. (9 grains) of quinidin produced auricular flutter which changed back to fibrillation in a few days. May 20, regular rhythm was restored by 1.4 gm. (22 grains) of quinidin in two days. May 28, an electrocardiogram again showed fibrillation, and June 2, regular rhythm was again restored after 1.4 gm. (22 grains) of quinidin. July 5, the rhythm was still regular.

CASE 5.—A man, aged 39, with a history of auricular fibrillation for at least one year previous to admission, had no evidence of cardiac valvular disease. The heart was normal in size, with no murmurs. There had been some loss of weight with a slight von Graefe's sign; basal metabolism was normal. September 12, after a total of 2.4 gm. (37 grains) of quinidin, an electrocardiogram showed normal rhythm, which has persisted up to October 5, with no recurrence of fibrillation.

We are greatly indebted to Dr. M. A. Rothschild for his courtesy in permitting us to include this case. It seemed probable to Dr. Rothschild that the patient had had exophthalmic goiter, the original cause of the fibrillation.

CASE 6.—A woman, aged 44, with mitral stenosis and insufficiency of rheumatic origin, had auricular fibrillation, proved by electrocardiogram. A total of 15.2 gm. (4 drams) of quinidin caused the fibrillation to become impure flutter and produced a slowing in the flutter rate; but there was never restoration of normal rhythm, and after the quinidin was

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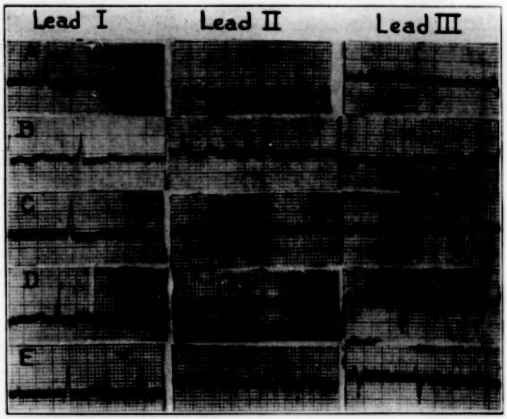
1. Faber, K.: Ugesk. f. Læger. **83**: 577 (May 5) 1921.
2. Hecht, A.: Wien. klin. Wchnschr. **6**: 171, 1917.
3. Boden, E., and Neukirch, P.: Deutsch. Arch. f. klin. Med. **136**: 181 (June) 1921.
4. Wiechmann, E.: Ueber die Ausscheidung des Chinidins im Harn, Ztschr. f. d. ges. exper. Med. **7**: 155, 1918.
5. Frey (Berl. klin. Wchnschr. **55**: 417, 451, 1918) states that one may attempt to combat the depressing effect of quinidin with caffein, one of the theobromin preparations, or camphor. He also recommends strychnin for its central effect, more particularly for its effect on the respiratory center. Two letters appeared in the British Medical Journal for Oct. 8, 1921—one by Sir James Mackenzie, the other by Dr. James Orr. They point out the increased dangers of embolism from intra-auricular thrombi, as a result of the change from flutter or fibrillation of the auricles to normal rhythm. Mackenzie also suggests that quinidin should be employed only in those cases of auricular fibrillation which do not respond to digitalis or strophanthus and which require treatment for heart failure.

stopped, the fibrillation persisted essentially unchanged. This slowing of oscillatory flutter rate by quinidin was repeated several times, as may be noted in the accompanying electrocardiograms.

COMMENT

An analysis of our twenty-two cases shows that in nine the fibrillation was changed to a normal rhythm, and in two others the auricles responded by a change to either pure or impure flutter. The age of the patient seemed to play no definite part in the success or failure of the treatment. The youngest patient who responded was 27 years old and the oldest was 69. One boy of 15, with a severe cardiac insufficiency, failed to respond. Sex did not appear to be a factor. A long previous duration of fibrillation did not necessarily indicate that the atrium would fail to respond, for in one of our successful cases the patient had been known to be suffering from fibrillation for more than three years, another for at least two and one-half years, and a third for more than two years. Still, we are distinctly under the impression that the cases of long standing and with advanced organic lesions are less likely to respond than those with recently established fibrillation. From the etiologic factor associated with the fibrillation, we could not predict the result of quinidin administration; we have seen success and also failure in each of the three common groups of cases, i. e., the valvular, the atherosclerotic and hypertensive, and those due to exophthalmic goiter.



Electrocardiograms* from Case 6, illustrating the reduction in oscillations as a result of the administration of quinidin. Ordinates: 1 division = 10^4 volts; abscissas: 1 division = 0.04 second. Record *A*, taken April 20, before the administration of quinidin, shows impure auricular flutter with a flutter rate of about 490 a minute; in *B*, taken April 25, after the administration of 3.8 gm. (58 grains) of quinidin in four days, the flutter rate is about 285; in *C*, taken May 2, five days after stopping the quinidin, the flutter rate is about 450 again; in *D*, taken May 23, after 3.8 gm. (58 grains) of quinidin administered during the four previous days, flutter rate is about 280, and in *E*, taken May 28, two days after stopping quinidin, flutter rate about 450. Numerous other electrocardiograms showed other rates, depending on the amount of quinidin given.

The duration of the change in mechanism after quinidin has been variable; the shortest interval has been six days. Our whole experience with the systematic use of the drug extends over only five months. Two of our patients continue to have normal mechanism, three and one-half and five months, respectively, after each was given a single series of quinidin. One other patient has had two recurrences of fibrillation, but each time has responded to quinidin. Still another woman responded to the first series; but, on suffering a relapse of fibrillation, she failed to respond to rather intensive dosages of quinidin.

The quinidin not only affected the cardiac rhythm but also caused various inconstant changes in the shape of the electrocardiogram. These changes consist essentially in slight alterations of the relative heights of the Q, R and S deflections and in the shape of the T wave. Teleoroentgenograms of several of our patients before and after the change from fibrillation to normal rhythm failed to show any significant or appreciable change in the shape or size of the heart. After the appearance of regular rhythm, in at least two of our cases, the diastolic murmur of mitral stenosis showed a presystolic accentuation. We hope to take heart sound records of such changes in the murmur.

An observation which we regard as significant with respect to the way in which quinidin acts on the heart resulted from our investigation of the effect of quinidin on the rate of flutter in those patients who, during the administration of the drug, exhibited either pure or impure auricular flutter. This effect is strikingly illustrated in Case 6. Before quinidin therapy was started, the electrocardiogram of this patient showed an impure auricular flutter, with an auricular rate of about 490 a minute. After two days of quinidin therapy, the flutter rate fell to about 285 and continued low until the quinidin was stopped, whereupon the auricular rate increased to about 450. On a second exhibition of quinidin, the flutter rate fell slowly to about 280, and rose again to about 500 when the drug was discontinued. The accompanying chart shows several electrocardiograms of this patient and illustrates graphically the effect of quinidin on the flutter rate. Another case of impure flutter showed a similar drop from a flutter rate of about 500 to 300, and still another showed a slowing from 460 to 300, at which point pure flutter replaced the impure flutter.

Several German observers[6] have noted a similar phenomenon; but the significance of this observation has not been emphasized. If we bear in mind the probable mechanism of flutter and impure flutter, as revealed by Garrey[7] and Mines,[8] in their experiments on circus contractions, and by Lewis,[9] in his extensive work on flutter and fibrillation, we are impelled to believe that a decreased flutter rate means a decrease in the rate of conductivity of auricular muscle. We know from the early work of Santesson,[10] corroborated later by Hofman,[11] that quinidin decreases the irrita-

6. Von Bergmann, G.: München. med. Wchnschr. **68**: 705, 1919. Boden and Neukirch, Footnote 3. Faber, Footnote 1. Frey, W.: Deutsch. Arch. f. klin. Med. **136**: 70 (April) 1921. Hecht, Footnote 2.
7. Garrey, W.: The Nature of Fibrillary Contraction of the Heart, Am. J. Physiol. **33**: 397, 1914.
8. Mines, G. R.: On Dynamic Equilibrium in the Heart, J. Physiol. **46**: 349, 1913.
9. Lewis, T.: Heart **7**: 117, 127, 131 (April) 1920; ibid. **7**: 293 (Aug.) 1920.
10. Santesson, C. G.: Ueber die Wirkung einiger Chinaalkaloide auf das irreguläre Froschherz und auf den Blutdruck des Kaninchens, Arch. f. exper. Path. u. Pharmakol. **32**: 321, 1893.
11. Hofman, cited by Frey, W.: Deutsch. Arch. f. klin. Med. **136**: 70 (April) 1921.

bility of auricular muscle. These two actions of quinidin, depression of the irritability and of the conduction rate in a fibrillating auricle, will tend to lessen the frequency and complexity of the fibrillatory contractions and thus will favor the establishment of a regular flutter or the reassertion of the normal sinus control.[12] The fact that fibrillation generally originates under conditions of increased rate and increased irritability lends support to this view.

Clinically, the fact that quinidin will often restore normal rhythm in the perpetually irregular heart is now well established. It may be questioned whether the patient is any better off for such a restoration of normal mechanism; and it may be answered that in most instances he *is* decidedly improved clinically. The question of the degree of improvement, if any, depends in part on the causative factor of the fibrillation; such

PUBLISHED CASES ILLUSTRATING THE EFFECT OF QUINIDIN ON AURICULAR FIBRILLATION

Author	Total Number of Cases Reported	Unaffected by Quinidin	Changed to Flutter	Normal Rhythm Restored
1. Benjamin and von Kapff (Deutsch. med. Wchnschr. **47**: 10 [Jan. 6] 1921)	27	9	..	18
2. Von Bergmann (München. med. Wchnschr. **66**: 705, 1919)	9	3	..	6
3. Boden and Neukirch (Deutsch. Arch. f. klin. Med. **136**: 181 [June] 1921)	17	10	1	6
4. Faber (Ugesk. f. Læger **83**: 577 [May 5] 1921)	2	1	..	1
5. Frey (Deutsch. Arch. f. klin. Med. **136**: 70 [April] 1921)	50	23	6	21
6. Hecht (Wien. klin. Wchnschr. **6**: 171, 1917)	2	2	..	..
7. Jenny (Schweiz. med. Wchnschr. **51**: 272 [March 24] 1921)	18	1	..	17
8. Klewitz (Deutsch. med. Wchnschr. **46**: 8 [Jan. 1] 1920)	13	8	4	1
9. Leschke and Ohm (München. med. Wchnschr. **68**: 65, 1921)	1	..	..	1
10. Levy (J. A. M. A. **76**: 1289 [May 7] 1921)	4	1	1	2
11. Schott (Deutsch. Arch. f. klin. Med. **134**: 208, 1920)	2	..	..	2
12. Wenckebach (Die unregelmässige Herztätigkeit und ihre klinische Bedeutung, 1914, pp. 125 and 128)	2	..	..	2
13. Wisser (Inaug. Dis., Cologne, 1920)	11	7	..	4
14. Drury and Iliescu (Brit. M. J. **2**: 511 [Oct. 1] 1921)	13	6	1	6
	171	71 (41%)	13 (8%)	87 (51%)

cases as resulted from a transitory toxic condition or trauma are more likely to be benefited than those which have as an underlying cause such permanent conditions as valvular defects, arteriosclerosis or myocardial degeneration. The mere change in mechanism from auricular fibrillation to normal sinus rhythm results in increased cardiac efficiency for several reasons:

1. The auricles instead of fibrillating now contract regularly and not only (*a*) propel some blood into the ventricles but also (*b*) tend to cause the auriculoventricular valves to be in the proper position for closure at the beginning of ventricular contraction and (*c*) also cause the ventricular musculature to be under slightly increased tension at the moment of contraction, thus insuring optimal conditions for the propulsion of blood.

2. The ventricles, instead of contracting at irregular intervals and with varying force, now contract at regular intervals and with constant force, thus insuring a proper period of rest between contractions and optimal conditions for efficiency of the ventricular muscle. Ventricular irregularity, including premature and abortive beats, is considered by Eyster and Swarthout the main factor in decreasing ventricular output in auricular fibrillation.

3. The normal sinus control, which is lost to a great extent when the auricles are fibrillating, is now restored and the heart is enabled to respond to varying demands by appropriate changes of rate. Experimentally, Eyster and Swarthout[13] have found that the induction of auricular fibrillation in dogs decreases the cardiac output 40 per cent. The clinical improvement in a patient immediately following the restoration of normal rhythm is frequently striking, being marked by relief from dyspnea and palpitation and by rapid subsidence of edema and pulmonary congestion.

SUMMARY

1. Quinidin checks auricular fibrillation in about 50 per cent. of the cases, as is evidenced by a summary of all published cases taken almost entirely from the continental literature.

2. The clinical value of the drug, properly administered, is demonstrated in our series of twenty-two cases of auricular fibrillation. Nine of these showed a response by the restoration of normal rhythm, and two others by a change to either pure or impure flutter.

3. Its effect is significant in the reduction of the oscillatory rate of impure flutter.

1 West Seventieth Street.

12. Since sending this article to THE JOURNAL, two papers by Lewis and his collaborators have appeared in a recent number of the British Medical Journal. They noted constantly the same slowing of the oscillatory rate, as we observed in three cases, and present a most interesting explanation of the mechanism by which quinidin interrupts auricular fibrillation (Drury, A. N., and Iliescu, C. C.: The Restoration of the Normal Cardiac Mechanisms in Cases of Auricular Fibrillation by Means of Quinidine Sulphate, Brit. M. J. **2**: 511 [Oct. 1] 1921. Lewis, Drury, Iliescu and Wood: The Manner in Which Quinidine Sulphate Acts in Auricular Fibrillation, Brit. M. J. **2**: 514 [Oct. 1] 1921).

13. Eyster, J. A. E., and Swarthout, E. C.: Experimental Determination of Influence of Abnormal Cardiac Rhythms on Mechanical Efficiency of Heart, Arch. Int. Med. **28**: 317 (March) 1920.

TRIGEMINAL NEURALGIA*

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It is a fact well known to those called on to treat trigeminal neuralgia that, although deep and peripheral nerve alcoholization and peripheral neurectomies are productive of relief, the pain invariably returns in the average period of about a year. When these regions are again dealt with, each subsequent period of relief becomes of shorter duration and less profound, until such a stage is arrived at as to afford no relief whatsoever.

The purpose of this paper is to establish two paramount points:

1. I have discovered that the buccal branch of the inferior maxillary division, though affected very often,

* Read before the Section on Stomatology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelop.

is hardly ever diagnosed, and different from the supra-orbital, infra-orbital and mandibular branches; the "trigger zone" is vague and may sometimes give the impression that the neighboring nerves are the affected ones. For want of better language I have named this phenomenon a "mirrored trigger zone."

2. Deep alcohol injections are more difficult and less certain, even in the hands of experts, than are well placed peripheral injections. Patrick,[1] who has had as large an experience as any in this country, admits in his report on 150 patients that he failed entirely in 26 per cent. of cases, was "partially successful" in 43 per cent. and absolutely successful in only 30 per cent. To this should be added that alarming sequelae have followed this procedure. Patrick, Cushing[2] and others have reported quite a few complications of a grave order following deep alcoholization.

INJECTION OF THE BUCCAL NERVE

Aside from Blair's mentioning the buccal injection, I have never encountered, in the voluminous literature on trigeminal neuralgia, the buccal as a branch susceptible of becoming affected. It was more by accident than ratiocination that it dawned on me that this nerve "mirrored" itself in adjacent tissues, not only as a trigger zone, but even as to the sharp paroxysmal pains. When the buccal nerve is affected, patients may complain of the auriculotemporal, infra-orbital or mandibular region. The reason becomes clear, once the course and distribution of the buccal nerve is recalled.

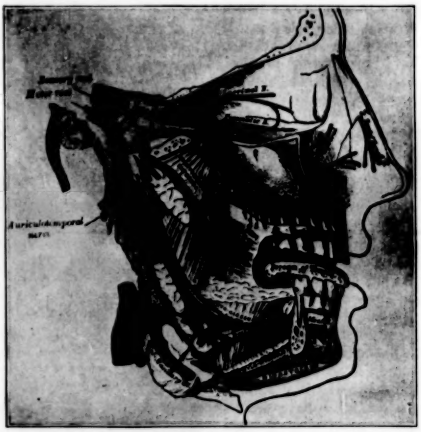

Fig. 1.—The buccal (buccinator) nerve is to be seen as the first and highest branch of the third division.

Figure 1 shows that the buccal nerve is given off at the anterior or motor root of the third division of the trigeminal nerve. The diameter of its trunk is almost equal to that of the lingual or mandibular nerve. Therefore, it is a nerve of appreciable size. Emerging between the two heads of the external pterygoid muscle, it passes forward on the inner surface of the tip of the coronoid process of the ascending ramus; then coursing obliquely downward and forward, it pierces the posterior fibers of the buccinator muscle, ramifying its substance. Here, in my opinion, is the probable explanation of the mirroring: The buccinator muscle decussates at the corner of the mouth so that the lower central fibers pass into the upper lip and the upper central fibers pass into the lower lip (Fig. 2). I am firmly convinced that this intersection of fibers is the cause of the mirroring, nor do I think that it is stretching a point so to construe it. Another peculiarity: The buccal nerve, though coming off of the motor root, is the only sensory branch supplying the buccinator muscle. Further, all the muscles of mastication are supplied with motor nerves from the above referred motor root of the fifth pair, except the buccinator, the buccinator receiving its motor supply from the facial or seventh pair of cranial nerves. Still further, the buccal nerve not only gives off a deep temporal branch but, as I have shown by dissection, may give off superficial temporal branches.

The buccal nerve, being surrounded by and occupying the middle ground of the other sensory branches, lends itself to stimulation on the slightest provocation. Thus, because of its course as it is given off from the anterior root of the inferior maxillary division, it is easily disturbed by the mere opening of the mouth. Talking, eating or sipping brings the buccinator muscle into play, and this is sufficient to bring on a paroxysm. Touching the cheek from within or without the mouth, shaving, washing or wiping the cheek is sure to start a paroxysm. To make the diagnosis more obscure, the buccal nerve will "mirror" itself so that to the operator it appears to be definitely this or that branch. Usually he is almost certain that either the infra-orbital or the mandibular is the affected branch. I know that my readers, like myself, have reoperated or reinjected a certain area time after time until the pateint was, like ourselves, discouraged and exhausted. The pain not only persisted but became accentuated in its severity. These patients were, if operated on by capable neurosurgeons, finally relieved by intracranial operations. At this time I wish to attest to the fact not only that intracranial neurectomies are effective but also that the operation is not so fraught with dangers as many suppose it to be. I have seen and known several people whose sensory root has been severed or gasserian ganglion removed, who were operated on by both Southern and Eastern surgeons and whose recoveries from the operation were as uneventful as, if not more so than from ordinary abdominal operations.

To return to our discussion: I have noticed that the buccal branch is rarely primarily affected. As a rule it becomes affected after the patient has gone through the gamut for a year or more. The lingual nerve is also given to mirroring itself in neighboring tissues. A single instance of several occurrences will suffice:

Mr. V., aged 55, had suffered with trigeminal neuralgia for over a year. To all appearances it seemed to be the right infra-orbital. Subjectively, he informed me that by touching the right upper second bicuspid with the tip of his tongue he would start the pain. In the belief that the right infra-orbital was the guilty one, it was injected; but the next day the patient returned with the same tooth complaint, although the

1. Patrick, H. T.: The Technic and Results of Deep Injections of Alcohol for Trifacial Neuralgia, J. A. M. A. **58**:155 (Jan. 20) 1912.
2. Cushing, Harvey: The Rôle of Deep Alcohol Injections in the Treatment of Trigeminal Neuralgia, J. A. M. A. **75**:441 (Aug. 14) 1920.
3. Blair, V. P.: Surgery and Diseases of the Mouth and Jaws, St. Louis, C. V. Mosby Company.

entire distribution of the infra-orbital nerve was anesthetic. When I touched his tooth with finger or instrument no paroxysm was elicited, but when I touched (with my finger) the tip of his tongue a violent and agonizing pain resulted, but mirrored in the right upper jaw. The lingual was immediately injected, and the pain has not returned.

Whether or not my opinion is shared as to the frequency of the elusive buccal branch becoming affected, I would suggest a blocking of it in the recurring patient. It is a procedure incapable of doing harm, and the technic for blocking it is simplicity itself.

Fig. 2.—The intersection of the buccinator fibers can be seen at the corner of the mouth.

Since the buccal nerve is affected in nearly all cases that have gone for a year or more, either it should be injected at the tip of the inner surface of the coronoid process, or it can be blocked a centimeter below and behind the mouth of Stenson's duct. Both points are reached intra-orally. I have, however, devised an extra-oral method that I think is easier for the average to master. The patient widely opens his mouth and a gag is inserted on the unaffected side. He is then instructed to pucker his lips, at the same time drawing the upper lip downward. This attempt makes the coronoid process conspicuous both to palpation and to vision. The needle is then inserted through the cheek just beneath the most prominent portion of the zygomatic bone, and advanced backward to reach the inner surface of the tip of the coronoid process (Fig. 3). One c.c. of alcohol I have found to be sufficient. It is certainly gratifying to see patients who have been entirely relieved in every instance in a series of fourteen cases. This statement can be vouched for by several local surgeons who have either seen the patients or have themselves made the injections. It is my opinion that injections made at the foramen ovale, although successful as far as the sensory root is concerned, may entirely miss the motor portion, and since the buccal is a branch of the latter, the patient may go unrelieved.

ADVANTAGE OF PERIPHERAL INJECTIONS

Not only is blocking of the maxillary branches at the foramen ovale and rotundum uncertain, but the period of relief is not longer than when peripheral measures are taken. The latter is, I am firmly convinced, because only the peripheral twigs are ever affected and, therefore, central injections, even when successful, are blocking superfluous branches. I arrive at the conclusion that only the peripheral branches are affected, first, because the patient's trigger zone and proper peripheral treatment has never led us out of the following nerve distribution: supra-orbital, infra-orbital, the trochlears and mental branches. Secondly, the paroxysms of pain are always located by the patient as peripheral, never deep. To be sure, there are cases of deep pains, such as otalgia and sphenopalatine (Sluder's) neuralgia; also neuralgia due to pulp stones, impacted teeth, exostosed teeth, intracranial tumors, etc.; but they do not have the characteristics of trigeminal neuralgia, and, therefore, are not germane to our discussion.

It is interesting to hear what success we have met in peripheral injections: Whether it is due to the small lumen of the 42 mm. needle making it easy to find and follow the infra-orbital canal, or whether it is due to the use of pure alcohol, rather than the diluted, I do not know; but I find the canal in 100 per cent. of cases, and my average patient is free from pain for over one year. For the last few months I have been adding a few drops of formaldehyd solution, believing that it will help as a tissue fixer. The supra-orbital and supratrochlear injections are just as successful; but, in order to prolong the effect, 1 c.c. should be injected for each branch, and both branches should be injected as a matter of routine. The lingual can be seen at the base of the tongue and is easily injected with 1 c.c. of solution. If the lingual is to be injected in the pterygomandibular fossa, 2 c.c. of 95 per cent. alcohol is to be used. This injection is also 100 per cent. successful. This applies to the buccal as well. The auriculotemporal can easily be injected, as it crosses the root of the zygoma. (This branch is rarely affected; the buccal, when affected, mirrors in this region as before explained.) A dull needle should be used for this injection so as not to penetrate the vessels in the vicinity. The mandibular branch is the only one that does not offer a 100 per cent. success, and for that reason we prefer to remove it intra-orally. The operation when done intra-orally not only obviates a scar, but facilitates the removal of the incisive and, what is more important, the labial and mental twigs. Bear in mind that I am stressing twig avulsion as more important than trunk removal. I am not at present prepared to say, but it appears that recurrent tic douloureux is due as much, if not more, to anastomosis after avulsion or injection, than to regeneration. Needless to say that, prior to injection, 1 c.c. of 1.5 per cent. procain-epinephrin solution is injected in order to prevent pain. Some operators will not anesthetize locally or with a general anesthetic, claiming that the conscious patient is of help. My experience is that the patient can be injected objectively, and, therefore, I prefer a local or general anesthetic.

Fig. 3.—Technic for extra-oral buccal injection.

COMMENT

The etiology and pathology of trigeminal neuralgia are unknown. This statement applies to all that has ever been written on the subject. It includes (although I for several years believed the contrary) impacted

teeth, abscessed teeth, teeth with pulp stones and teeth whose roots press on nerve trunks. Exostosed roots, jagged alveoli following extractions—in short, no dental disturbances are capable of producing a single case of trigeminal neuralgia. I wish that every dentist and physician that first meets the patient afflicted with this tormenting disease, with the unmistakable symptoms accompanying it, would bear this in mind. If they could only realize that the instalment plan of extracting the patient's teeth; that dieting, climate, roentgen rays and violet rays are worse than useless, the patient would be spared much suffering and expense. It is also well to bear in mind that, though an infected antrum or small cyst or other condition be

Fig. 5.—This patient, after having the right gasserian removed, developed neuralgia on the opposite side.

present along with tic douloureaux, the clearing up of the antrum or other condition will not in the least influence this dreadful malady, as they are merely coincidental.

It seems that the recital of the characteristics of this malady could be endless and still comparatively few recognize it. And the suggestions for treatment that one meets would be ludicrous if deprived of their disastrous effects. Extraction of teeth is about the oldest of ineffective treatment, and, as Cushing observes, few maladies can vie with this in the number of suggested remedies. Snake venom has been seriously advocated. Sir Arbuthnot Lane[4] asserts that the removal of the colon has cured trigeminal neuralgia.

One characteristic that is paramount above all is that the patient will invariably state that the pain is the most excruciating of all pains. This includes any injury he has received; acute appendicitis, renal colic, or other pain.

Figure 5 shows a case in which, after an intracranial operation, the patient had the opposite (left side) affected. As a bilateral gasserian was contraindicated, she was referred for injection. The injection was made into the infra-orbital foramen with relief from pain for two years. Recently she complained of pain and her buccal nerve was injected with the result of completely stopping her paroxysms. A crawling sensation, however, still persists.

4. Lane, Arbuthnot: Chronic Intestinal Stasis.

CONCLUSIONS

1. Dental disorders do not cause trigeminal neuralgia, nor do cranial tumors. When either are present they are merely concomitants. The etiology is, unfortunately, unknown.

2. Deep alcohol injections are entirely too uncertain and do not offer relief from pain for a period exceeding proper peripheral injections.

3. Intracranial operations in the hands of the skilled are not as dangerous as reported.[5]

4. Because of its course, the long buccal nerve encroaches upon both the second and third distribution. Furthermore, the decussation of the buccinator muscle into the orbicularis oris makes it possible for the mirrored trigger zone to assert itself.

Fourth National Bank Building.

5. Da Costa: Modern Surgery.

HISTOPATHOLOGY OF APICAL REGION OF TEETH WITH PARTLY FILLED ROOT CANALS*

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Teeth with root canals partly filled because of failure to introduce the filling material down to the apical opening have never been carefully studied by histologic methods,[1] nor is there any record of experimental work of this kind done on animals. This study is concerned, however, with human teeth extracted for the most part because of disease, of either the peridental or the apical region. Such material from the clinics of the Northwestern University Dental School was chosen for a preliminary study because of its availability and because no other human material was to be had with histories and roentgenograms. It is undoubtedly true that the conditions present in such material are not average, and that the regenerative and reconstructive changes are close to the possible minimum, for in every case they represent clinical failures. This must be considered in any interpretation of the following results.

It was early found in our work that, to handle any considerable number of teeth, the conservative, well tried histologic methods were too time consuming. On this account, after considerable experiment, the frozen section method was chosen. Decalcification was carried out in 5 per cent. nitric acid, which contained 40 c.c. of solution of fermaldehyd to each liter, and daily changes of the solution were made. At the end

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* Read before the Section on Stomatology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Davis, in a paper read before the Institute of Dental Teachers at Indianapolis in January, 1921, described a series of studies made by him on teeth with partly filled root canals. He thought that with mechanical removal of part of the pulp, so-called "surgical amputation of the pulp," the apical portion of the canal became filled with a solid core of "bone." His preparations were all made by grinding, and were dry and unstained.

of two days the teeth were cut into blocks suitable for sectioning, and the decalcification was continued for one to two days longer. The short time employed yielded much more clearly stained preparations. For the structure of the pulp and peridental membrane nothing gave more uniformly good results than hematoxylin and eosin, but afforded no differentiation of the hard structures. In our hands the Schmorl thioninpicric acid stain furnished precisely this differentiation. By using these stains in alternation it was possible to study the relationship of all the soft and calcified structures. Contrary to our expectations, the sections held together surprisingly well, and so far no embedding method has been used, although the serviceability of the Sahlkind[2] cherry gum method has suggested itself. Where desirable, serial sections can be cut by this method, though somewhat thicker than those cut without any effort to keep the order intact. Formaldehyd fixation has been most satisfactory, although the Zenker fixation yielded better stained sections with hematoxylin and eosin and the various coal tar dyes used especially for bacteria. The long fixation as proposed by Skillen[3] has been used in a few cases, and it is worth noting that the pictures of the hard structures in the apical region obtained by it and by the Schmorl method are essentially the same, though varying in some of the minute details.

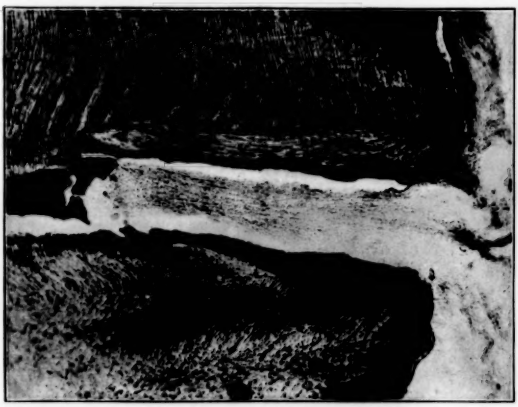

Fig. 1.—Apical opening of a tooth with a partly filled root canal, containing atypical pulp tissue. There is no evidence of any active process, either absorption of the root or regeneration.

The largest single group of like changes occurring in the apical regions of these teeth with partly filled root canals are those found in the presence of infection, most of which are classified as chronic alveolar abscesses. Destructive changes are the rule, and the layer or layers of cementum covering the root end are quite narrow, though hypercementosis is often present, and in so characteristic a location as to seem to be a part of the change.

The unfilled portion of the pulp canal is either empty or contains an unorganized mass of the cells characteristic of low grade infection, or a formless mass of necrotic tissue. Where cellular structures are present, they are often embedded in a fibrous network best developed close to the wall of the pulp chamber, and continuous with a similar fibrous layer covering the end of the root in the place of the peridental membrane. At that part of the circumference of the root where the capsule of the chronic abscess, if present, is attached to the peridental membrane and the cementum, these two sets of fibers become fused, i. e., those of the abscess capsule and these which have just been described. This junction point is important, for it is here, if anywhere, that the thickening of the cementum is noteworthy. This connective tissue layer and framework adjacent to the wall of the pulp chamber and the cementum of the root tip is most important, for in its meshes are harbored blood vessels, osteoclasts, and other cells engaged in absorption of both the cementum and the dentin of the root end.

So far absorption has not been found in these studies except under these conditions, that is, the presence of osteoclasts and connective tissue cells. One cannot help being impressed with the fact that large numbers of various pathologic wandering cells are often found in the meshes of the alveolar abscess just on the other side of the organized covering of the root end. This type of abscess corresponds rather closely to one of the two described by Gilmer.[4] In the second type neither absorption nor regeneration of soft or hard tissues occurs except under conditions like the foregoing or in the presence of an intact or partly intact peridental membrane.

The opposite extreme is found in root ends in which the apical portion of the pulp canal contains a more or less intact pulp, with vessels, nerve filaments, typical pulp cells and occasionally typical odontoblasts. The planes of contact of this pulp with the filling material are marked either by a layer of fibrous tissue or a layer of calcified material, and this calcified material may be amorphous, or may resemble secondary dentin, or more frequently cementum. Such pulp tissue lies in canals greatly narrowed by symmetrical or asymmetrical deposits of secondary dentin, cementum or amorphous calcium deposits. All the spaces unoccupied by hard tissues and filling material are occupied by such pulp tissue. It seems apparent that some of the hard material in and about the pulp chamber has been deposited since the filling, but much of the narrowing of the lumen goes back to a much earlier period (Fig. 1).

Closely akin to this are these apical pulp chambers that contain soft structures more or less undifferentiated. In some of these teeth this pseudopulp extends up to the apical end of the filling material and others not so far, leaving, apparently, a more or less empty space between. Some of the pictures of such teeth are striking: the ancient, irregularly round erosions into the dentin still distinguishable but now filled by cementum or some similar substance exactly molded

2. Sahlkind, J.: Compt. rend. Soc. de biol. **89**: 811, 1916.
3. Skillen: Dental Cosmos, June, 1920.
4. Gilmer: Proc. Inst. Med. Chicago **3**: 118, 1921.

into the cavities formed by the ancient absorption. There is evidence of the presence of still active cementoblasts in this pseudopulp with the embedding of their fibers into the newly formed calcified hard tissues

Fig. 2.—High power field from the wall of the root canal of the apical portion of a partly filled tooth. The eroded border of the old wall is now filled by cementum, which has greatly reduced the diameter of the pulp chamber now occupied by an atypical pulp.

lining the pulp chamber. In other teeth this soft tissue lies within a pulp cavity which is but little changed either by absorption or by deposit is of hard substance. This pseudopulp tissue is vascular, and consists of a more or less fibrous network in the meshes of which, close to the pulp wall, are found cementoblasts (Fig. 2).

The complete or nearly complete closure of the unfilled apical portion of the pulp canal by hard structures is found in a number of cases. There is nothing remarkable about such a closure: it is merely the end-result of the changes already described. In the smaller accessory foramina such a closure seems to be the rule, but it is much rare in the larger, principal canals. In teeth with living pulps, such closures of the smaller foramina have frequently been found; so, no doubt, many of these seen in teeth with partly filled pulp canals were closed before the fillings were inserted. The structure of this plug of calcified material more often resembles cementum rather than dentin, or it may be quite amorphous, or lamellated like the markings of a fossil crinoid. It is the rule that the cementum covering the roots of teeth in this group is unusually thick, and this thickness may attain a very noteworthy degree, though the peridental membrane seems to maintain its normal width, as long as infection is absent. Spherical concretions are occasionally found in it but never of any notable size (Fig. 3).

In all of these apexes where constructive changes are in progress, the cementum is richly supplied with lacunae and an interlacing network of fibrils, and the mixed character of the junction of the cementum and dentin is very prominent, with occasional club shaped terminations of the dentinal tubules in apparent connection with the spaces in the cementum. There is nothing to distinguish the structures of this portion of these teeth from those in teeth with entirely intact pulps, when prepared and stained in the same way. The peridental membrane of all but the infected roots is everywhere normally attached to the cementum. It has an ample blood supply so that nutrition is sufficient.

Out of twenty-nine teeth examined there are apical foramina that are empty or that contain granulation tissue in nineteen; there are five apexes with living pulps, four with undifferentiated cellular structures, and seven with foramina closed with calcified plugs. Evidently infection is the most serious accident that may happen to the apical region of a partly filled tooth. This is borne out by the fact that in each of two molar teeth with three roots all partly filled, one root of each contains a living pulp, two roots of one and one root of the other are the site of noteworthy chronic infections, and the multiple foramina of the third root of the latter are practically closed by hard cores.

The existence of living pulps in these apical canals can be explained only on the assumption either that a living pulp was not damaged beyond the end of the root filling, or that a living pulp, though badly mutilated or damaged by the process of filling and sterilizing the root canal, was able partly to regenerate itself through the activity of cells or groups of cells, perhaps attached to undamaged blood vessels.

Fig. 3.—Two foramina of the apical region occupied by calcified cores. This bicuspid has fillings in both root canals and hard cores in all the apical openings.

It is possible and even probable that this sort of pulp tissue may be an extension from the peridental membrane of the apical region. This seems very likely in the group of atypical pulps. It may not be

peridental membrane, but because it is a constructive tissue, repairing the erosions of previous absorptions, and because the hard tissue deposited by it is similar in all respects to the apical cementum, it seems reasonable to assume that it may have originated from the peridental membrane. However, in many respects the pulp of the apical portion of the tooth does not always react like that of the middle or coronal portions, and the fibrous tissue framework and the cementum producing cells may resist insult better than the odontoblasts, the pulp cells and the nerves. These atypical pulps may be the remnants of otherwise destroyed pulps.

Although the number of teeth examined is too small for generalizations, yet the clinical opinion that constructive changes do take place about the apexes of many teeth with partly filled root canals seems to be justified. In the second place, the apical portions of many teeth with partly filled root canals, judged by the same standards as are usually applied to teeth with intact pulps, are living structures. In the third place, infection is the most serious hindrance to the regeneration of the apical region, or to the complete closure of the unfilled canal by calcified plugs. And in the fourth place, it should be suggested that uneven closure of the unfilled canal may be a serious matter. The opinion is advanced that purely local conditions are of more importance than general conditions, that regenerations are more apt to be successful in root canals in which the distance between the apical end of the filling material and the apex is not too great, and that the small lumen or the lumen with a wide apical opening tapering toward the filling is more likely to escape unfortunate complication.

THE ABDUCTION TREATMENT OF FRACTURE OF THE NECK OF THE FEMUR

CONSIDERED AS THE EXPONENT OF RADICAL REFORM *

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The object of treatment of a fracture is to restore the symmetry of the broken bone, because the primary cause of nonunion is separation of the fragments, and because deformity entails loss of function. To accomplish this object the method must be adapted to the mechanics of the injured part, and the result, therefore, is primarily determined by the skill and efficiency of the one who selects and applies it.

To these accepted conclusions, fracture of the neck of the femur has been the single exception; for in this instance, according to a leading treatise on fractures, "the ideal object of treatment, restoration of form and function, is rarely to be attempted or even sought. . . . The first indication is to save life, the second to get union, the third to correct or diminish displacements."

Ostensibly, these indications are in the interest of the patient, on the assumption that treatment as applied to other fractures, even if practicable, would be, in most instances, either dangerous or futile; actually they represent the subordination of surgical principles to inadequate mechanics.

This statement may be readily verified, since the basis of all treatment in common use is traction on the limb, which, however efficient for fracture of the shaft of the femur, is manifestly inadequate in this situation, because the neck of the femur projects laterally. Thus, traction can at best appose the fragments in a lateral and therefore insecure relation.

This inadequacy was clearly presented by Sir Astley Cooper in the statement that the primary causes of nonunion were separation of the fragments by spasmodic action of the muscles, which it was impossible to control by extension or otherwise, and lack of mutual pressure of the fragments, which in fracture of the small part of the neck was essential to repair. One would hardly advise, therefore, "the breaking up of an impaction" which assured the apposition of the fragments, nor subject a feeble subject to the dangers and discomforts of prolonged confinement with so slight a prospect of success. The treatment of the fracture, therefore, if applied at all, has always been essentially perfunctory.

Bissell,[1] from an analysis of the treatment in three representative New York hospitals, concluded that it was practically useless. And it is stated by Henderson[2] that of 120 cases of ununited fracture at the hip observed at the Mayo Clinic, not one had received proper treatment at the time of the injury. Failure, either partial or complete, has been the natural sequence. According to an authority, "In all cases, function is forever impaired, and irrespective of the position or character of the fracture, or of union, or of nonunion, shortening of the limb and lameness are the inevitable results."

Such results, were any other fracture concerned, would be ascribed to defective treatment; but in this instance, it is assumed that they are determined by the mechanical or physical or nutritive obstacles to repair rather than by the character of the surgical intervention.

The abduction method is by contrast radical and revolutionary, simply because, being mechanically adequate for its purpose, fracture of the neck of the femur, in all operable cases, is treated like other fractures, in complete disregard of the qualifications and restrictions of conventional practice and of the conclusions that uphold it.

The abduction method is adequate because it utilizes the anatomy of the hip joint both to correct deformity and to appose displaced fragments, external appliances being entirely subsidiary to the internal, or natural, splinting.

Normally the neck of the femur projects forward and upward from the shaft. As the limb is abducted, the head of the bone descends in the acetabulum, the movement being finally checked by tension on the capsule, by contact of the upper border of the neck with the rim of the acetabulum, and by the apposition of the great trochanter with the side of the pelvis.

In the attitude of complete abduction, the neck of the femur lies in an approximately horizontal plane. In this plane only can the fragments of a fracture of the neck be brought end to end, and as the head is

* Read before the Section on Orthopedic Surgery at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Bissell: Philadelphia M. J., May 30, 1903.
2. Henderson, M. S.: Surg., Gynec. & Obst. 30:145 (Feb.) 1920.

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fixed in the acetabulum, the tension on the capsule assures direct mutual pressure of the fractured surfaces, which is, according to Cooper, essential to repair. Security is further assured by the inclusion of fractures of the subcapital type within the acetabulum, by the apposition of the trochanter and the pelvis, and by the complete muscular impotence that the attitude assures.

The practical application of the treatment for complete fracture is as follows:

The patient, having been anesthetized, is placed on a pelvic support with a perineal bar, the shoulders resting on a box of equal height. Two assistants make manual traction on the extended limbs, drawing the perineum firmly against the bar and completely reducing the shortening on the injured side; the surgeon meanwhile lifting the thigh upward, if it is below the plane of its fellow. The limb is then rotated slightly inward, thus completely apposing the fragments. Both limbs, extended and under manual traction, are then abducted to the full limit, on the sound side first, to demonstrate the normal range and to balance the pelvis. When this limit is approached on the injured side, tension on the capsule assures the alinement of the fragments, and forces a resistant contact. A long plaster spica is then applied, which, by fixing the limb in complete abduction, full extension and slight inward rotation, assures the security of the internal splinting.

Fig. 1.—Second stage of the abduction method as applied for central fracture of the neck of the left femur. The shortening having been reduced by manual traction, the two limbs are abducted to the normal limit. Slight inward rotation is combined with complete abduction and extension.

The treatment of the incomplete fracture is practically the same. The characteristic deformity of fracture of the neck of the femur is a downward and backward displacement of the neck in relation to the shaft (coxa vara). This deformity causes outward rotation and direct shortening of the limb; but what is of far greater importance is the limitation of abduction and the secondary or apparent shortening due to upward tilting of the pelvis, on the injured side. The correction of deformity, therefore, is essential to functional repair, and it may be very easily accomplished by adjusting the position of the shaft which is under control to that of the neck. Thus, the neck, being displaced downward and backward, is in a relation to the acetabulum that in an unbroken bone would require abduction and inward rotation of the shaft; one therefore places the limb in this attitude and fixes it during the period of repair.

In most instances, by the manipulation already described for complete fracture, the shortening of the so-called impaction may be as easily reduced as if the separation were manifestly complete. If, however, the resistance is greater, as in the incomplete fractures of childhood, or when treatment has been delayed, manual traction is supplemented by downward pressure on the projecting trochanter and more effectively by natural leverage. For since the range of normal abduction is dependent on the upward inclination of the neck of the femur, its depression must limit abduction by contact with the upper border of the acetabulum. This contact fixes the neck, and by the leverage of the extended limb against this fulcrum the limb may be abducted, and then rotated inward to the required degree. Correction of deformity is the first essential of functional repair; and, far from endangering union, it is the most effective means of promoting it, since restoration of the normal contour apposes the fractured surfaces which were displaced by the distortion.

The subsequent treatment is the same for all forms of fracture. The head of the bed is raised one or two feet, in inclination which, as contrasted with that required for traction, is far more comfortable, and because of its influence on the blood supply more favorable to repair. The patient is turned at intervals from side to side and completely over to the ventral position, without discomfort or danger of displacement; thus, bed sores and hypostatic congestion may be prevented. If feasible, patients may be transported daily to the open air, and fixation in the abducted attitude even permits locomotion without injury as has often been demonstrated by young and unruly subjects. The spica is retained from eight to twelve weeks, or until it may be assumed, or demonstrated by roentgen-ray examination, that union is sufficiently firm to permit movement of the limb. On its removal, the patient should remain in bed, devoting if possible several weeks to muscular reeducation and to the restoration of motion in the disused joints, the limb being drawn out to the limit of abduction at regular intervals by the attendant.

Weight bearing is not permitted until free and painless movement and roentgen-ray examination indicate stability of repair. Thus, what may be termed the physiologic treatment of fracture of the neck of the femur, at least of the central type, is rarely completed within a year; and, if early locomotion is desired, a protective hip brace should be provided. Adequate protection is almost as essential to restoration of function as the correction of the deformity, and its complete neglect in the conventional routine explains much of the final disability in cases in which the fracture has united.

The abduction treatment, bring exact and purposeful, requires in its application qualifications similar to those for other surgical procedures of like importance; namely, an understanding of its mechanical principles, sufficient familiarity with anatomic landmarks to assure the restoration of the normal relations, and the ability to apply a secure and comfortable plaster spica, since this is the only form of splint that is usually at command.

Conventional treatment, by contrast, makes no such technical demands, since according to the indications quoted, "Restoration of form and function is rarely to be attempted or even sought." One is obliged, therefore, in the face of established custom and tradition, to present an argument for what would be considered obvious were any other fracture concerned. It is evident that the greater the obstacles to repair,

whether mechanical or nutritive, the more directly is it dependent on favorable opportunity, namely, the accurate apposition and fixation of the fragments. Nor can it be questioned that the abduction method is adequate to assure this opportunity, since its attainment may be demonstrated by the roentgen ray at the time of the operation and at intervals thereafter. The practical issue is no longer whether efficient treatment of the fracture is practicable. It is whether it is worth while, in view of its danger to life, its essential futility, and the danger to repair of disturbing a fortuitous fixation, the three assumptions that support what has been aptly termed the surgical ritual.

The abduction treatment is designed as a standard routine for operable cases of fracture of the neck of the femur; but the impression that the typical patient is aged or infirm, and that the treatment of the fracture is of minor importance, is so firmly established that the advocate of efficiency must, in order to gain a hearing, follow the conventional order and consider unfavorable cases first.

It is, of course, difficult to estimate the danger of treatment apart from that of the injury in an old person, but it seems reasonable to assume that the abduction treatment, which relieves pain, permits change of posture and thus prevents hypostatic congestion and bed sores, is less dangerous than treatment that confines the patient to the back, and in many instances less dangerous than nontreatment, with its almost inevitable consequences. Furthermore, it appears from recent investigations with the roentgen ray, notably by Bassett,[3] that the fracture in the aged is usually at the base of the neck, and that the central fracture is more common in the young and vigorous. Thus, from both the nutritive and the mechanical standpoints, the prognosis is apparently more favorable than has been believed.

Fig. 2.—Elevation of the head of the bed and the attitude that prevents hypostatic congestion and bed sores. The application of the shirting within and without is shown in the two illustrations, which are of the same patient.

Moreover, it would appear that repair is primarily a question of opportunity rather than of nutrition, since other fractures unite readily in aged subjects, while nonunion after fracture of the neck of the femur occurs even in childhood under conventional treatment. It seems fair, therefore, to conclude that the danger to life in aged subjects is primarily from the injury and its consequences, and that conclusions as to nutritive incapacity are purely speculative, since the opportunity for repair has rarely been assured by conventional treatment.

The last question is of far greater importance, since it concerns the restoration of function, for which the first essential is the correction of deformity, or what is called "the breaking up of an impaction." Impaction, in this situation, has always had peculiar conventional significance. It implies, apparently, a telescopic inclusion of one fragment in the other that assures fixation and thus union. This is, however, merely a traditional interpretation of physical signs that is rarely confirmed by roentgen-ray examination or by treatment. Almost the only resistant deformities are the incomplete fractures of childhood and the partial epiphyseal displacements of adolescence. The correction of deformity by the abduction method, supplemented as it is by secure fixation, actually favors repair, because it apposes the fractured surfaces, which in most instances are completely or partly separated by the distortion.

Since it has always been accepted as a rule of practice that "impactions" should be protected, the effect of deformity on joint function, and as a cause of the discomfort and disability supposed to be inevitable after this injury, has been practically ignored. This point of view is illustrated by a well known authority, who, in advocating artificial impaction for intracapsular fractures as the only hope of union, states that fractures at the base of the neck "get well anyhow, under any form of handling, good or bad," and are therefore of comparatively little therapeutic interest.

If this is true, the practically universal disability that follows this injury must be explained in great part by uncorrected deformity and its consequences, rather than by nonunion; and now that an adequate means of correction is at command, the reduction of deformity which must embarrass function should be as much a matter of routine as in treatment of any other joint fracture.

In recent years, evidently in recognition of the mechanical inadequacy of conventional methods, primary operative intervention has been advocated. It should be apparent, however, that artificial impaction or the insertion of nails or screws can serve no purpose other than to appose the fragments at the expense of injury of the reparative tissues—an apposition that can be effectively assured by the abduction method if properly applied.

It is assumed that an autogenous bone peg will stimulate, and thus hasten repair; but the operation thus far has been limited to vigorous individuals who should have recovered without it. I conclude, therefore, that primary open operations are indicated, as for other fractures, only in cases in which the fragments cannot otherwise be apposed.

When the abduction method was a novelty, the appeal for efficient treatment was of necessity made to reason, and in this final paper of the series, the same line of argument has been followed, although its contentions have long since been amply confirmed by actual experience. In my own practice, there are very few exceptions to the routine application of the treatment, and the results compare favorably with those of other fractures of the lower extremity in patients of the same type.

3. Bassett: Les fractures du col du fémur, Paris, 1920.

As concrete evidence, two contrasting reports may be cited: that of the British committee on fractures in which the results were classed as good in but 23 per cent., and that of Campbell[4] of an approximately equal number of cases treated by the abduction method in which the good results were approximately 94 per cent.—a balance of 70 per cent. in favor of efficient treatment.

CONCLUSIONS

The title of this paper has, I think, been justified by the exposition presented.

It has been demonstrated, both technically and practically, that fracture of the neck of the femur, in the great majority of cases, is amenable to treatment in accord with surgical principles, and that the results are more directly determined by the efficient application of these principles than are those of any other fracture.

The abduction method is the exponent of radical reform, because it has established a standard to which treatment must eventually conform, since the tenets on which conventional practice is based, having been disproved and discredited, can no longer assure immunity for inefficiency, incompetence and neglect.

FRACTURES OF THE FEMORAL NECK AND TROCHANTERS

A RATIONAL TREATMENT*

CHARLES E. RUTH, M.D.
DES MOINES, IOWA

It is my intention to present here a method of treatment of fractures of the neck and trochanters of the femur which may be relied on to produce as good results as any other known method and which is not subject to the limitations which bar these others from universal use.

Normal anatomy shows many muscles influencing the position of the femur. With the thigh in extension, the powerful iliopsoas acts as an internal rotator, the head of the femur in the acetabulum resisting this muscle internal to the line of muscle action. This characteristic is in addition to the principal function of the muscle, that of flexion, becoming less marked the more nearly the thigh approaches a right angle with the trunk, but never losing it entirely except in certain injuries which disturb the normal relation of the femur with adjacent parts. The iliopsoas is inserted into the lesser trochanter, crossing not far above the insertion of the neck of the femur, on which it exerts considerable pressure when the thigh is extended and the muscle contracts. There are twenty other muscles which directly influence the position of the femur, the most important of which are the gluteus maximus, long head of the biceps, semitendinosus and semimembranosus, all extensors; the obturators externus and internus, gemelli, pyriformis and quadratus femoris, which are external rotators. It is with these muscles, next to the iliopsoas, that we are most concerned, for they are the principal factors in producing, with the iliopsoas, the normal muscle balance.

From the rim of the acetabulum, running outward and downward, is the capsular ligament, which becomes a close fitting sleeve around the neck of the femur, almost completely enclosing it as far as the trochanters where it joins the femur. From this close fitting sleeve pass many vincula to the head and neck.

The blood supply to the neck arrives by two routes. The arteries supplying the trochanters also supply the distal part of the neck, whereas the source of supply for the proximal end is the artery entering the head through the ligamentum teres. The anastomosis between these two sources is not good. In the aged these vessels may also have undergone atheromatous changes. The point of poorest blood supply is the narrow part of the neck.

Diagnosis of unimpacted fracture of the neck of the femur is made on the history of a fall, blow or strain which produces sudden pain in the hip, thigh or knee, or all three, inability to use the limb, the presence of shortening, flattening of the hip, trochanter behind and above the normal level as compared with the injured side, external rotation, preternatural mobility, occasional crepitus which it is not advisable to elicit, and the roentgen ray.

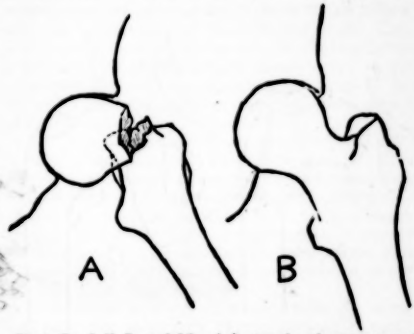

Fig. 1 (Dr. C. V. Z., aged 54).—*A*, fracture through narrow part of the neck; treated for ten weeks by longitudinal and lateral traction. *B*, after five years: no shortening, and no impairment whatever of range or function.

On fracture of the neck of the femur, the resistance to the action of the iliopsoas is moved from the head of the bone to the great trochanter, which, lying outside the line of action of this muscle, changes it into a powerful external rotator, thus causing the very evident eversion, the external rotators mentioned a moment ago now acting with the iliopsoas instead of opposing it as they do under normal conditions. This change in the action of the iliopsoas can be easily demonstrated on the cadaver or by artificial muscles fitted to the femur and innominate bones, as I shall now show. For the same reason, solution of the continuity of the femoral neck, the muscles of extension and flexion now act together to produce the shortening which is so characteristic of this condition.

In this fracture the proximal fragment is not actively displaced because no muscles are attached to it, the position it occupies being determined by the position assumed by the proximal end of the distal

4. Campbell, W. C.: Ann. Surg. **70**: 600 (Nov.) 1919.

* Read before the Section on Orthopedic Surgery at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

fragment. This naturally follows from their common relation to the capsular ligament. However, the distal fragment being rotated externally, a gaping of the fracture line is produced anteriorly into which nonbony tissue is forced by the overlying muscle.

Successful treatment depends on reduction and maintenance of reduction until union has taken place and the callus hardened sufficiently to withstand normal muscle tension. The underlying principle in maintaining this reduction rests in using the capsular ligament as a splint. If force can be applied to counteract the abnormal muscle pull and make tense the capsule, we immediately have all the fragments of the neck falling into line, tightly bound down by the tension of the capsule, the many vincula dragging into position any small reluctant fragment that may resist. Thus maintained, union is inevitable, provided the patient has vitality to live a few weeks and the circulation in the neck exists at all.

All other successful methods of treating this fracture depend on the same principle, that of using the capsular ligament as a splint, with the force which

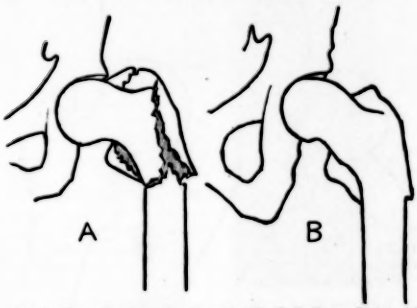

Fig. 2 (Henry D., aged 26, referred by Dr. O. J. Fay).—Patient fell 18 feet. *A*, neck at right angles to shaft; anatomic treatment, eight weeks; no shortening. *B*, consolidation complete after eight weeks; range of passive motion unimpaired; no shortening.

produces the tension of the capsule applied in a different way. Whitman abducts the thigh until the trochanter bears against the rim of the acetabulum. Further force makes the capsule tense, and resolution takes places as indicated before. Jones uses an abduction frame to produce the force and maintain reduction instead of the plaster spica as advocated by Whitman.

This tension of the capsule and reproduction of normal position I produce by traction in two directions, the resultant artificially reproducing the force once represented by the unfractured neck. Heavy longitudinal traction counteracts the shortening of the limb. Lighter traction outward, upward and forward, with relation to the supine patient, combined with a twist to rotate the thigh inward, counteracts the flattening of the hip, posterior displacement due to weight and the external rotation.

Application of traction in these two directions is not difficult, but requires care. Diagnosis having been made, the patient is given a narcotic, if one has not already been given, and the patient placed in the room in which he is to undergo treatment. The bed should have a spring which does not sag, and a smooth, firm mattress. The door of the room should be wide enough so that the bed can be rolled out to the roentgen-ray laboratory whenever verification of the reduction may be indicated. The apparatus may now be applied.

A stick carrying a pulley at the upper end is nailed or lashed to the foot of the bed in line with the desired traction, the pulley being at such a height as to be in an extension of the line from the hip to the foot, and leaning from the bed at sufficient angle so that the weight will clear all parts of the bed and apparatus. A pail or bag of sand is placed near at hand and a cord run through the pulley but not attached to the weight. In a similar fashion another stick, carrying two pulleys, is attached to the side of the bed on the patient's injured side, the pulleys being about a foot above the level of the hip and the same distance nearer the head of the bed. These pulleys may be arranged one above the other or side by side, as may be convenient, and cords are run through them, the outer ends of which are attached to pails or bags of sand. The adhesive plaster having been prepared in proper lengths and widths, the gauze protection is removed and then lightly replaced, as it is much easier to manipulate with the gauze on, but readily removable. If the fabric is weak it will be better to double it before applying, for it is very annoying to be called by the nurse a few hours afterward and told that the adhesive plaster has torn in two. The doubling is accomplished by superimposing a second layer on that already prepared.

The leg is now shaved throughout the entire length, washed with alcohol and ether, and dried. Beginning at the ankle, the adhesive plaster is now applied, about a foot being left overhanging at the ankle end to fasten to a spreader. As the adhesive plaster is applied, the loosely attached gauze protection is removed from the gummed surface. This makes it possible to apply the adhesive plaster more quickly, easily and smoothly because it is not constantly sticking to the bedding and itself. It is most essential for the adhesive plaster to be applied smoothly, without fold or wrinkle, for such folds and wrinkles are productive of much discomfort and a frequent cause of broken skin and consequent difficulties. Spiral strips may be used to reinforce the longitudinal strips, if needed. These may be separate from or integral with the longitudinal ones. None of these must cross the knee cap, nor must the spirals be so short as to interfere with the circulation. No traction adhesive plaster is applied closer to the perineum than 4 inches. The free ends of the longitudinal strips are now attached to the spreader, and the leg bandaged with a gauze bandage to hold the adhesive plaster in place.

A piece of fiber or binders' board, 4 or 5 inches wide, long enough to encircle the thigh two thirds and curved to fit the inner surface, is well padded with cotton held on with gauze bandage and adhesive plaster. A 4 inch strip of adhesive plaster is now applied to the inner surface of the thigh behind the vessels, close up to the perineum, and carried under and around the thigh to the outer side. When the circle is nearly completed, the padded binders' board is applied to the inner surface of the thigh as close as possible to the perineum, with the anterior edge behind the vessels so that no pressure is made upon them. The adhesive plaster is then brought over the binders' board and

firmly attached thereto. Another strip of adhesive plaster is now passed entirely around the thigh over the binders' board, to which the gummed surface adheres. This strip is made sufficiently long so that the free ends may be tied to cords running over the lateral pulleys to their respective weights, the lower end carrying a weight of from 12 to 18 pounds, the upper, 5 or 6 pounds. The cords may now be adjusted for proper length and allowed to exert their power.

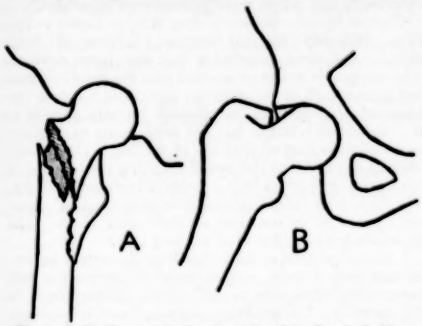

Fig. 3 (J. W. S., aged 42, lineman, referred by Dr. O. J. Fay).—Patient fell 25 feet. *A*, fracture of forearm. *B*, eighteen months after injury; no shortening; no impairment in any way.

The bed is raised on shock blocks at the foot and on the injured side. The foot of the bed on the injured side is raised 12 inches, the opposite side 8 inches, the post at the head on the injured side 4 inches. These heights are not absolute, but may be increased or decreased to correspond with the amount of traction applied.

Everything is now ready for reduction. The operator flexes the knee on the thigh and the thigh on the trunk, both to a right angle, at the same time increasing the eversion. This maneuver frees all soft parts from between the fragments. With the joints flexed the knee is brought to the midline, correcting the eversion, extension is made strongly on the thigh to raise the trochanter to the normal level, and the leg is extended while under heavy traction by the operator, who discontinues this longitudinal traction after an assistant ties the spreader to the cord of the longitudinal traction apparatus. A second assistant may aid lateral traction during this process by outward pressure with his hand, or the operator may himself increase this traction in a similar way. The fracture is now reduced and the traction in both directions operating in a proper manner. This traction, continued for four weeks, will find the patient able to rotate the thigh outward and inward, the trochanter describing the arc of a circle, the center of which is the bottom of the acetabulum, thus proving union of the fracture.

In impacted fractures of the neck, it is not always possible to make a diagnosis without the roentgen ray. Pain may be severe but not increased on passive motion. Deformity may be absent or pronounced, and the patient may walk. In any case, in a little time without treatment the softening which occurs, owing to absorption of the roughened bone at the fracture line, which precedes consolidation, will produce disimpaction with all the evidences of complete fracture. Impacted fractures without displacement do not call for breaking up the impaction, but do require the apparatus to be applied. This is done in the regular manner, omitting altogether the method of reduction. Impacted fractures, with deformity, call for the apparatus to be applied and reduction accomplished as in fractures without impaction.

Fractures through the base of the neck show the same displacing tendencies as those through the narrow part of the neck, and, because these fractures are partly within and partly without the capsule, there is still a great restraining tendency by the capsule to hold the fragments in position, and the capsule can still be used as a splint. For these reasons the treatment for fractures through the base of the neck is the same as that for unimpacted fractures through the narrow part. In this locality the vascularity is greater and repair is more certain. Impaction may occur, but I have never seen such a case.

Trochanteric fractures present fewer difficulties than those mentioned before, even when they are badly comminuted, because the blood supply is much better and the interposition of nonbody tissue less likely. The dense aponeurotic investment of the trochanteric insertion of the gluteal muscles usually prevents wide separation of the greater trochanteric fragments, provided no great manipulative force has been used in attempted reduction.

Trochanteric fractures cannot be said to be uniform in their characteristics. They vary greatly. There may be a single break or comminution into many fragments. When there are many fragments, the injury is usually due to a crushing force. Both trochanters may be attached to the proximal fragment, or one attached to the proximal fragment and the other to the distal fragment. At times both trochanters may be entirely separate from either fragment.

In fractures in which the lesser trochanter is torn off, the entire attachment of the iliopsoas is usually carried with it. In such cases there is slight tendency for eversion of the limb. The addition of the Hodg-

Fig. 4 (Mrs. G. S., aged 53, referred by Dr. Ira Gibson).—*A*, three months after fracture; without treatment. *B*, poorly nailed without opening fracture line; treated eight weeks by the longitudinal and lateral traction, and then by Phillips splint for six months; result, no shortening or impairment of function; patient does all her housework five years after injury.

kins splint and the Balkan frame will make the treatment somewhat easier and insure a more satisfactory result. After the adhesive plaster is applied as for fractures of the neck, the leg is swung in the splint with the knee slightly bent, and the thigh is flexed on the trunk at an angle of about 30 degrees from the horizontal. This flexion approximates the torn off lesser trochanter to the position it normally occupies. Reduction, as for neck fractures, is not indicated, the longitudinal and lateral traction being adjusted to place and keep the fragments in normal position without

other force. The position of the fragments must be verified with the roentgen ray from time to time, especially during the first few days, that the apparatus may be adjusted to the best advantage, if perfect adjustment was not accomplished at the time of original attachment.

In fractures through the trochanters beyond the digital fossa, the obturators and gemelli are inclined to rotate the proximal fragment backward and place it in eversion and abduction. When this occurs, it is necessary to abduct the limb to bring the fragments into close apposition. To maintain the abduction it is essential to tie the uninjured limb loosely to the opposite side of the bed; otherwise the patient will swing the trunk into line with the longitudinal traction.

In all these fractures, union is usually present within four weeks after treatment has been instituted, at which time the lateral traction is removed. Union having taken place, the longitudinal traction may be removed with safety at the end of four more weeks,

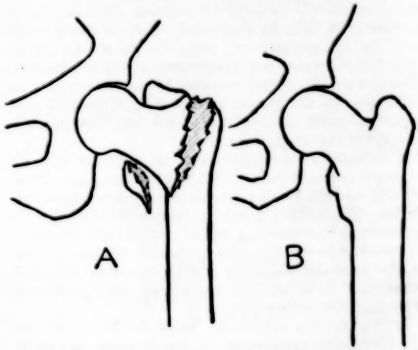

Fig. 5 (Mrs. J. A., aged 91).—*A*, under anatomic treatment seven and one-half weeks with thigh flexed 30 degrees. *B*, seven and one-half weeks after fracture; in four months, range unimpaired; patient walking with crutches and beginning to bear some weight.

the callus being sufficiently hard to withstand the normal muscle pull without body weight. Crutches, with or without braces, must be used for from four to ten months to prevent the strain of the body weight from bending the soft callus and producing shortening. The patient should be able to walk without crutch or stick at the end of six months in all trochanteric fractures, eight months in fractures of the base of the neck, and one year in fractures of the neck at the narrow part. The surgeon must be careful not to allow patients to attempt to bear body weight on the limb too soon, taking into account the location of the fracture, the speed of repair of a fracture in this location, and the age, weight and physical condition.

The first essential in this treatment is accurate diagnosis. If the roentgen ray is not available, the fracture should be treated from beginning to end as one through the narrow part of the neck. The number of pounds used for the traction lines will vary with the patient. Fifty pounds may be needed for the longitudinal traction in a strong young man or an old man who has a spastic paralysis. In spastic cases of central origin the muscles do not tire, and the amount of traction may not be lessened, as is usually done after a few days, in the ordinary case. The lateral traction seldom requires more than 25 pounds, usually less, divided between the upper and lower sides of the thigh in the proportion of 1 to 3. There is no absolute way to judge the correct weights except by the position the leg assumes from day to day. If the leg shortens, the longitudinal traction must be increased. If the foot is everted more than normally, that must be adjusted. The leg must be measured and inspected for bad adjustment each day, which must be corrected if present.

Failure by this method is due, first, to faulty reduction. Soft parts are still interposed between the fragments, and their coaptation has not been attained. The nurse has not been warned that the traction must not be eased off or removed for any cause for even one moment of time until the surgeon himself attends to it. Sufficient traction has not been made to produce and maintain normal position of the leg. The patient himself has lessened the traction, during the absence of the nurse, in order to take a position more to his liking. The family or other visitors have attempted to adjust the apparatus to conform to their own ideas. The patient has walked too soon without aids.

I claim for this method that it is as certain as any method now known, simple, easy of application and universally applicable to all classes of fractures in this location. The apparatus may be easily improvised out of boards, sticks and empty spools when prepared materials are not available. The patient is not uncomfortable if the apparatus has been properly applied and reduction successfully accomplished. Excellent care may be taken of the patient at all times, he may be raised to a semisitting position with the assistance of two persons, and the nurse can then easily reach his back for cleansing and rubbing. This position may be assumed for long periods of time and hypostatic pneumonia thereby rendered unlikely. Bed sores need never occur. If the patient enters with them he may be speedily cured while under treatment for the fracture, as I have demonstrated many times. The bed pan can be used without difficulty, the patient assisting in the placing of the pan by flexing the uninjured leg until the heel is in contact with the buttock. He can then raise himself with very little aid. In a similar way the buttocks, anus and lower part of the back can be cleansed and cared for. In cases in which the Balkan frame is used, this maneuver is even easier, because much of the weight is already supported by the apparatus. Patients entering with severe pain are greatly relieved immediately on reduction and the application of the apparatus. After forty-eight hours the patient reaches a degree of comfort that makes the use of a narcotic unnecessary. Enough knee action by passive motion may be attained to prevent subsequent stiffness. No anesthetic is required at any stage of the treatment. No operation is necessary.

SUMMARY

1. Normally the iliopsoas is an internal rotator, but when the neck is fractured it becomes an external rotator. In fractures of the neck it overlies the fracture line and forces nonbony tissue between the fragments. It is thus the greatest factor tending to displacement and nonunion.

2. This method uses the capsular ligament as a splint by making the capsule tense through the application of traction in two directions.

3. The application of the traction needed is not difficult, but requires care in the angles at which the traction is set, the amount of traction and the attachment of the adhesive plaster to preserve the skin in good condition.

4. Impacted fractures should not be broken up if there is no deformity, but the apparatus is applied to prevent the disimpaction, with all the evidences of complete fracture, which follows the absorption of the rough surfaces of the fragments prior to consolidation.

5. Impacted fractures with deformity are broken up, reduced and treated the same as nonimpacted fractures.

6. Fractures through the base of the neck present the same deformities as those through the narrow part, and require the same treatment.

7. Trochanteric fractures repair more easily and rapidly. No forcible reduction should be attempted, but the traction of the apparatus depended on to reproduce normal position. When the lesser trochanter is

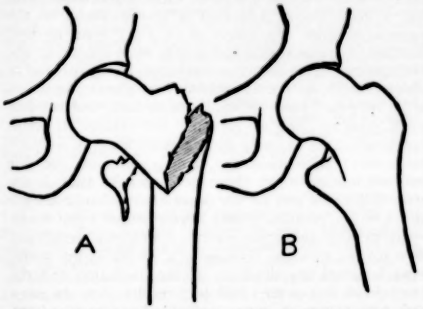

Fig. 6 (Mrs. R., aged 72).—*A*, treated by longitudinal and lateral traction six weeks. *B*, no shortening; no impairment whatever of range or use; patient now 79 years old and can walk 3 miles without limp or halt.

torn off, the leg is placed in a Hodgkin splint and swung from a Balkan frame, the thigh flexed on the trunk.

8. Union occurs within four weeks, after which the lateral traction is removed. In four weeks more all apparatus may be removed, and the patient walks without aids in from six months to one year.

9. Essentials are: accurate diagnosis, complete reduction, sufficient amount of traction, and daily verification of the position during the early part of the treatment.

10. This method is correct in principle, simple of application, convenient during treatment, and satisfactorily efficient.

Forced Labor.—Another procedure that should come up for consideration and comparison is hurrying the third stage of labor by expression of the placenta with the first uterine contraction after the child has been delivered. This is definitely unphysiologic in that it takes time for the uterus, by its contraction and retraction, to separate and expel the placenta and produce proper uterine hemostasis. While this practice may be safe in the hands of the trained specialist, it is bad practice and bad teaching for the practitioner and for students.—J. O. Polak, *Am. J. Obst. & Gynec.* **2**:239 (Sept.) 1921.

FINAL RESULTS OF FRACTURE OF THE NECK OF THE FEMUR

WITHOUT TREATMENT, OR WITH WORSE THAN NO TREATMENT *

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CHICAGO

The purpose of this paper is not to advocate any new form of treatment for fractures of the neck of the femur, or to criticize any of the usual methods of treating such cases, but to report the cases that have come under my observation in private practice during the past twenty-nine years, in many of which, without any treatment whatsoever, excellent results were obtained. From this I do not mean to argue that fractures of the neck of the femur should not be treated at all; but I do think that the conclusion is justified that some good results are due fully as much to the natural tendency of the fractures to unite as to the treatment they receive.

The fact that intracapsular fractures of the neck of the femur do sometimes unite without treatment appears to be proof that there is nothing inherent in an intercapsular fracture that necessarily leads to nonunion. It is true that there is little external callus in intercapsular fractures, but this influences the ultimate union only so far as it delays the time when the limb may be safely used. In fractures of the shaft of the femur the external callus is often very abundant, and because of this the limb may be safely used long before the end-to-end union is solid. When the end-to-end union is solid, the external callus is mainly absorbed. If as much time were given for the end-to-end union in fractures of the femoral neck to solidify before weight carrying is attempted as it takes for the external callus in fractures of the shaft to disappear, there would be fewer cases of "nonunion" and fewer bad results.

The relatively greater frequency of nonunion and delayed union of fractures of the neck of the femur over other fractures is due to the fact that these fractures are not usually treated as other fractures are treated. The principles of treatment should be the same for all fractures, namely: The broken surfaces should be approximated as accurately as possible, "set," and then immobilized—held continuously in that relation until union has taken place; and the limb should not be used for full weight carrying until the union has become strong.

When the neck of the femur is fractured and not impacted, the broken surface of the lower fragment turns forward and rides upward, and the broken surface of the upper fragment turns downward and backward.

I know of no way of "setting" these fragments except by Whitman's method of traction, abduction and inward rotation of the limb. Traction pulls the upward-riding lower fragment down, and abduction and inward rotation bring the broken surfaces near together, and tense the capsule to hold them in place. Whether this is done by hand, as Whitman does it, or

* Read before the Section on Orthopedic Surgery at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

* Owing to lack of space, this article is abbreviated in THE JOURNAL by the omission of case reports and illustrations. The complete article appears in the Transactions of the Section and in the author's reprints.

had corrected displacement in the fractured fragments. The absence of bandage interference with the normal circulation in the limb and the early movement of the joint secured muscle and ligament suppleness. Perfect motion resulted in all directions without shortening. At the end of a few months the patient was able to use the injured limb as well as the other, and to walk several miles with freedom.

DR. L. S. KEMP, Boston: The type of appliance used was the abduction splint. The patient had shortening at the time of fracture, but there is no shortening now. She was injured, February 18, and was discharged, June 9, in splendid condition from the hospital and went to her son's home. Since then I have had eleven cases treated in the same way and they have all come out equally well.

DR. WALTER G. STERN, Cleveland: In a choice of these two successful methods of treatment of fracture of the hip joint I prefer the Whitman method. As intimated in Ridlon's paper, in many parts of the country they still do not know that intracapsular fractures of the hip are curable. Many men advise that these patients are not to be treated because a fracture here does not unite. The publication of Ridlon's paper will do much good because, as I understand it, it contains the message that fracture of the hip joint in the old or the young has no inherent tendency not to unite. Ridlon also mentioned three cardinal symptoms, but he said nothing of crepitation and abnormal mobility. Nor are these symptoms necessary for diagnosis. A man who practiced very little but who was superintendent of a soldiers' and sailors' home said that if any person above the age of 50 slips and falls, and cannot get up from the floor, he undoubtedly has fracture of the hip joint. It is even not necessary to fall to the floor for older people to get a fracture of the femur, a sudden twist, a slip or a lurch to the side may fracutre the hip by torsion, and as a result of the fracture the patient falls to the floor.

DR. FRED H. ALBEE, New York: I am sure that Ridlon intended to convey that efficient fixation would cause the bone to unite, and wished to counteract the impression that these cases are hopeless of attaining results. We cannot possibly sanction the nontreatment of intracapsular fracture of the neck of the femur. I have a large number of ununited fractures of the hip coming to me all the time, and most of the patients have either not been treated adequately or not treated at all. We should draw a careful distinction between transtrochanteric fractures and fractures of the neck of the femur. Dr. Ruth starts out well in pointing out the displacing elements, but I cannot follow his deductions as to the treatment indicated. Flexion of the thigh neutralizes the displacing effect of the psoas magnus muscle, and if carried out would make unnecessary lateral traction, which I believe is contraindicated. I am sure the Whitman abduction treatment is preferable. It brings the fractured ends together and holds them firmly. As to the remark that three different types of treatment of fracture of the neck of the femur should be selected for three different periods in life, I cannot agree. I believe that the Whitman abduction method is indicated for all periods of life. In extremely old people, when applied without using an anesthetic, besides furnishing the best treatment to secure union it offers by all means the lowest mortality. The plaster spica should be so applied that it does not cause pain. A good fracture table is necessary for this work, especially when an anesthetic is not used. Care should be taken to avoid too much abduction, especially in cases of long standing nonunions, as erosion has always shortened in a varying degree the femoral neck. In such cases a posture of extreme abduction levers apart the fractured ends. Following the insertion of the bone graft peg for nonunion, only a slight amount of abduction should be used.

DR. GEORGE B. PACKARD, Denver: If the details are carried out in any one of the three methods, the results will be good. Some years ago Dr. Ruth showed us the exact way of doing this work and I have followed his method ever since. The results have been so satisfactory that I have never tried any other method of treatment in these cases.

DR. HORACE R. ALLEN, Indianapolis: Every mechanical principle in use has affixed to it exact, definite and unalterable qualities; and from these inherent and generic qualities it cannot deviate, no matter how suave the great surgeon may be who trifles with it. There are also a few laws concerning broken bones: One of them is that bones grow together in the position in which they are held. So all any fracture needs after reduction is maintenance of reduction. This reduces our selection to the little group of "fixation forces for fixation purposes." Dr. Whitman uses a fixation force for a fixation purpose when he secures the trochanter or distal fragment firmly against the soft tissues adjacent to the acetabulum. Dr. Albee, with transfixing bone pegs, uses fixation forces for fixation purposes. Doubtless there are other methods of employing fixation forces for fixation purposes that work equally well. For over twenty years I have known of a bloodless method that requires no anesthetic or analgesic from the time of injury until complete recovery. By this method, femurs unite regularly and are the exact length, or, if desired, they may be held longer or shorter during the process of bony union. However, there is little hope for better surgical principles until the mechanical principles on which surgery is founded undergo a process of reform and rearrangement. We have just heard advocated the use of the weight and pulley, and its use is highly recommended in at least a ton of our up-to-date treatises on surgical principles. The idea of maintaining a constant distance or location of a bone fragment by tying a constant, acting force to it does sound a little queer, and as a matter of fact it is queer. The constant active force of gravity is all right and also unalterable. It so happens that it is a very inappropriate force with which to attempt fixing constant distance. This is especially true since it is to be opposed by the most inconstant of all forces, namely, muscle contraction. Muscles contract involuntarily as well as voluntarily. Also they tire out and then contract or jerk or undergo tremor or spastic contractions. The little weight tied to the pulley is never commensurate with the pulling capacity of the opposing muscles. That is why patients can remain in their tilted beds. Why argue when it is so easy to select appropriate forces?

DR. FREDERIC J. COTTON, Boston: I am glad to see that we are coming to what seems the most important thing. We have talked at cross-purposes for years, and now the real facts seem to have come out, namely, that there are two types of fracture of the intracapsular and the extracapsular, entirely different in problems presented and in results. Fractures outside the capsule often enough do badly, but as a result of failure to get and maintain position and to avoid contractures. There is no risk of nonunion in this class of cases. With extracapsular fractures we have first to get good position (checked by the roentgen ray); second to maintain this position (checking with the roentgen ray) and so avoid coxa vara. Convalescence may legitimately be shortened if handling is adequate. I have had patients who have walked in three months. In this class of cases I prefer traction, though you can often get good results with simple abduction. In "subcapital," "intracapsular" fractures, fractures of the neck proper, on the other hand, the real problem is one of nonunion. A lot of these cases have healed with any kind of treatment or without treatment; and though they may have some deformity, there is not necessarily any disability if there is union. The thing that counts is the question of union pure and simple, bony union preferred, close fibrous union admitted. There is no question that more or less abduction is the favorable position. How far this will bring about bony union is not so much the immediate question. It limits contractures and probably minimizes the tendency to displacement. I doubt if it (or any method) can insure bony union in the old and feeble. Case after case with apparently firm impaction in which repair goes on for several weeks will show a breakdown afterward. This I have seen in many natural impactions, in three artificial impactions, and under carefully carried out extreme abduction. In my opinion, the question is therefore one of securing good reduction or at least good enough reduction, and then maintaining the most balanced position, which is, of course, abduction, and then long maintenance of protection so as to give the patient repair that will "stand the gaff," and that includes care for a long time. I think, if it is understood, that these are two classes to be treated differenly in regard to reduction and after-care the matter will be clear. It is a question of a clear conception of two types of fracture and what we must do with each.

DR. C. V. ZWALUWENBURG, Riverside, Calif.: A fracture of my hip, involving the small part of the neck of the femur was treated practically "not at all," to quote Dr. Ridlon, but, we made an effort to carry out Dr. Ruth's ideas. I feel that I have a perfect result. The roentgenogram revealed fracture at the middle of the neck with displacement to one fourth the diameter of the bone at that point. This treatment is very comfortable. Another point is plenty of weight in the extension, abduction of the femur just as Whitman does it, with the side pull in addition to a rotating pull, and a little weight to keep the toe in. The roentgen ray shows a perfect result, but the comfort is the point I would like to emphasize. The point about the extra weight is that it allowed me to sit up in bed resting on a back rest. The other point is the time necessary for union to take place. We frequently do not give enough time for union to occur. My plea is for more time before the patient is allowed to get out of bed. My surgeon, Dr. W. W. Richardson of Los Angeles, said "You can get up after seven or eight weeks." As I was comfortable, I decided to lie there ten weeks. I was on crutches six months from the time of the fracture.

DR. CHARLES E. RUTH, Des Moines, Iowa: I made it a point in presenting these cases to show the considerable number that were successfully treated by amateurs. One of the principal points in connection with the treatment I have advocated for thirty years is that no anesthetic is required for reduction. About one man in a thousand can put on a plaster cast well. If I were suffering from fracture of the neck of the femur and could not have the treatment I have advocated and used so many years, I should want the Whitman treatment, if I could get a plaster expert to apply it. But a very obese individual with the Hottentot variety of buttocks suffering from fracture of the femoral neck could, in ten days after application of the plaster, have an adjustment of the fracture only in imagination.

DR. ROYAL WHITMAN, New York: The abduction treatment is the exponent of reform because, being mechanically adequate for its purpose, surgical principles are applied in the treatment of fracture of the neck of the femur, regardless of the conclusions adapted to inadequacy that have thus far governed conventional practice. I do not recognize the significance of the distinction between extracapsular and intracapsular fracture, emphasized by Dr. Campbell and Dr. Cotton, implying, apparently, that in the one case efficient treatment is essential to union, while in the other its character is of little consequence because, whether the treatment is good or bad, repair follows. If repair is so certain in the extracapsular fracture, all the more attention should be paid to the restoration of normal function by the complete correction of the deformity, now made practicable by the abduction method, and by adequate after-care, on which the result is dependent. I did not say that impaction does not occur. I said that impaction is an ancient conception dating from a time when there was no means of demonstrating the actual condition. In a very large majority of cases of so-called impaction there is actually no impaction whatever, as demonstrated by the ease with which the deformity can be reduced under anesthesia. Impactions, whether actual or imaginary, should always be reduced whenever the deformity impairs the free movement on which function depends. I can hardly agree with Dr. Campbell as to the danger of overabduction. I conclude that it must be remote, since in the practice of others I have rarely seen the limb placed in sufficient abduction to assure accuracy and security of adjustment. I think the Maxwell-Ruth method is the only traction method that deserves serious consideration. It is, however, not comprehensive in its scope in the sense of correcting resistant deformity, and unfortunately the skill and persistence which have made this treatment so successful at the hands of Dr. Ruth can never be at general command. The method has been before the profession for more than fifty years, yet it has made practically no impression on the futile conventional routine. The same objection may be made to Dr. Bradford's abduction splint, even admitting that it has all the advantages claimed for it, that neither the apparatus, nor the training required to make it effective is at command. The abduction method has three great advantages over any other—comprehensive mechanical effectiveness, single control, and general availability. It should become, therefore, the basic routine when the traditional teaching to which the textbooks as a class are still loyal that the result in this particular fracture is determined by chance, rather than by the opportunity for repair that may be assured by positive treatment, has been finally repudiated.

DR. JOHN RIDLON, Chicago: There is only one criticism that I have to answer, and that is Dr. Thomson's remark that he thinks it is a mistake to publish my paper. It does not pay, in his opinion, to tell the truth about the patients who recover without treatment. I admit that it has not paid me. Nevertheless I will tell the truth. If one can treat a patient efficiently—and the most efficient treatment is the Whitman method—it should be done that way. If one can treat it efficiently by the Jones method or double Thomas hip splint, or by the Bradford method, it is well. But if one cannot treat a fractured femoral neck efficiently, it should not be treated at all; let the patient lie in bed until he gets well.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

BROMIPIN 10 PER CENT.—Brominized Sesame Oil, 10 per cent.-Merck. A bromine addition product of sesame oil, containing from 9.8 to 11.2 per cent. of bromine in organic combination.

Actions and Uses.—Bromipin, 10 per cent., acts like the inorganic bromides; but, since it yields its bromine more slowly, it is thought to have less tendency to produce bromism. The combination is not broken up in the stomach; but a portion of the bromine is split off as soon as the compound enters the intestine; the remaining compound is readily absorbed, and, as in the case of other fats, it is largely deposited in the tissues where it is slowly split up. Bromipin, 10 per cent., is said to be more lasting in its action than the bromides.

Dosage.—Four Cc. (1 fluidrachm), which may be increased in cases of epilepsy to from 8 to 30 Cc. (2 to 8 fluidrachms). It may be given in emulsion with peppermint water and syrup, or pure, flavored with oil of peppermint.

Marketed by Merck & Co., New York, under U. S. patent 774,224 (issued Nov. 8, 1904; expired), by license of Chemical Foundation, Inc., U. S. trademark 32,002.

Bromipin 10 per cent. is prepared by action of bromin chlorid to produce the required brominization.

Bromipin 10 per cent. is a yellow oily liquid, having an oleaginous taste.

To 1 Cc. of bromipin 10 per cent. and 1 Cc. of chloroform add a few drops of phenolphthalein solution. The addition of 0.3 Cc. (1 drop) of half-normal sodium hydroxid produces a red color (*limit of acidity*).

Saponify about 3 Gm. of Bromipin 10 per cent., accurately weighed, by boiling with 25 Cc. of alcohol and 5 Gm. of potassium hydroxide in a porcelain dish. Evaporate to dryness on a water bath and incinerate the residue over a gentle flame. Dissolve in water to make exactly 200 Cc. and filter. Acidulate 50 Cc. of the filtrate in a separator with diluted sulphuric acid; add 20 Cc. of carbon tetrachloride and 5 Cc. of freshly prepared chlorine water. Shake thoroughly and allow to separate. Repeat this until further additions of chlorine water do not cause the aqueous layer to become yellow. Draw off the carbon tetrachloride solution. Add 10 Cc. of carbon tetrachloride, agitate and draw off the solution, uniting it with the first carbon tetrachloride solution. Repeat the extraction with a further portion of 5 Cc. of carbon tetrachloride. Pass the carbon tetrachloride solution through a dry filter into a flask and add potassium iodide solution. Shake thoroughly and titrate the free iodine with tenth-normal sodium thiosulphate. The amount of bromin found is not less than 9.8 per cent. nor more than 11.2 per cent.

Sanation, Not Cure.—Each morbid phenomenon is the resultant of many causal factors, and in consonance with this therapeutic measures must be directed against a multiplicity of pathogenetic forces. In a word, we now put in the place of the conception of cure the conception of sanation. This is indicate by a change of vocabulary. We tacitly drop the term cure and employ instead the terms clinical improvement, recuperation, recovery, convalescence and restoration of health.—A. Wright, *Lancet* **2**:644, 1921.

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SATURDAY, DECEMBER 3, 1921

QUESTIONNAIRE ON ALCOHOL AS A THERAPEUTIC AGENT

Various statements have been made as to the views of the medical profession on the therapeutic value of alcohol, whether whisky, beer or wine. The profession is quoted both as being in favor of and opposed to its use. So far as we know, no attempt has been made to ascertain the opinions of any considerable number of physicians on this question. In order to secure the views of a representative cross-section of the medical profession, a referendum is being taken this week. The questionnaire [1] has been carefully prepared, so that each physician can express his opinion on the important points in connection with the whole proposition. It is sent to forty thousand physicians—every other name on our mailing list. This list includes Fellows of the Association, members of the organization, and nonmembers. In addition it is sent to ten thousand physicians who are neither members of the organization nor subscribers to The Journal, selected in a similar manner from the A. M. A. Directory. These lists cover the whole country. A study of the questions will show that they are not leading and can not influence in any way the opinion of the physician who replies. This referendum is of the utmost importance, and it is sincerely hoped that every physician who receives the questionnaire will immediately give it his careful consideration. It is the duty of every physician who receives this questionnaire to express his opinion.

1. Questionnaire on Alcohol as a Therapeutic Agent:

[Write answers only on this page. If you desire to comment, use reverse side.]

1. In what line of practice are you engaged? General practice?.....
Specialty?.....
(State Specialty)
2. (a) Do you regard whisky as a necessary therapeutic agent in the practice of medicine? Yes [ ] No [ ]
[By "whisky" is meant distilled liquors, whether whisky, brandy, gin, or rum.]
(b) If "yes," in what diseases or conditions do you regard whisky as necessary?
3. (a) Do you regard beer as a necessary therapeutic agent in the practice of medicine? Yes [ ] No [ ]
[By "beer" is meant beer with the same alcoholic content as prevailed before prohibition went into effect, also ale, stout, porter, etc.]
(b) If "yes," in what diseases or conditions do you regard beer as necessary?
4. (a) Do you regard wine as a necessary therapeutic agent in the practice of medicine? Yes [ ] No [ ]
(b) If "yes," in what diseases or conditions do you regard wine as necessary?
5. (a) Have instances occurred in your own practice in which unnecessary suffering or death has resulted from the enforcement of prohibition laws? Yes [ ] No [ ]
(b) If "yes," how many such cases have you known in the last year?.....
6. How many times have you found it advisable to prescribe these liquors in a month?
Whisky..... Beer..... Wine.....
7. Is the prescribing of alcoholic liquors forbidden by your state law? Yes [ ] No [ ]
If "no," do you hold a federal permit? Yes [ ] No [ ]
8. (a) The present regulations limit the number of prescriptions to 100 in three months. In your opinion, should there be any limit to the number of prescriptions for alcoholic liquors a physician may write? Yes [ ] No [ ]
(b) If "yes," what should the limit be?
9. (a) In your opinion, should physicians be restricted in prescribing whisky, beer and wine? Yes [ ] No [ ]
(b) If "yes," what restrictions should be made?

.....M.D.

(Postoffice Address) (State)

Please sign your reply, not for publication, but in order that we may know that it was filled out by a qualified physician. If you do not care to answer the questions, kindly return this questionnaire, with or without your signature. Return to American Medical Association, 535 N. Dearborn St., Chicago, Ill.
Stamped return envelope enclosed.

THE PROBLEM OF OXYGEN THERAPY

That the living organism needs oxygen no one will gainsay. The fact has been appreciated almost since the days when this gas was first recognized as a chemical entity. Where the call for oxygen comes from was not so promptly understood. It has been evident for some time, however, that the place of oxidation in the body is in the active cells, not in the blood as was formerly maintained. Furthermore, the science of physiology can today say with assurance that the quantity of oxygen taken up by the cells is conditioned by their needs rather than by the supply. The cells take what they require and leave the rest. The amount of oxygen passing from the blood to the tissues depends on the difference between the pressure of oxygen in the blood and in the tissues. The higher the oxygen pressure in the blood, the greater will be the amount of oxygen passing from the blood of the capillaries into the tissues in a given unit of time. Hence, as a recent writer [1] has clearly expressed it, oxygen diffuses from the place of higher pressure to the place of no pressure or low pressure. In the active tissues the oxygen tension is always low, and it is usually supposed that there is then no oxygen pressure at all inside the cells. The dissociation of oxygen from the hemoglobin of the blood occurs with great rapidity, but it is greatest where the differences in pressure are greatest. It follows, therefore, that the oxygen pressure in the blood must be sufficiently high to supply the needs of the cell in the brief interval of time that the blood is passing through the capillaries.

The consequences of the more extreme reductions in oxygen intake with a resultant imperfect aeration of the arterial blood with this gas are well known. Mountain climbing, ballooning and aviation have furnished striking illustrations. The periodic breathing, nausea, headache, impaired circulation, and even more serious progressive damage to the central nervous system, heart and other organs are now generally ascribed "solely

1. Manual of Medical Research Laboratory, War Department, Air Service, Division of Military Aeronautics, Washington, 1918, p. 11.

and simply to lack of oxygen." Whether anoxemia is a phenomenon of any considerable frequency under ordinary atmospheric conditions has until lately been more problematic. It is stated that the existence of cyanosis is prima facie evidence of lack of oxygen in clinical disease. One must bear in mind that not only the amount of oxygen available but also the tension at which it is present determines its availability. At low tensions, such as the venous blood often shows, oxygen may pass cells unused because the impetus for diffusion is lacking.

With the development of accurate methods for the direct determination of the degree of oxygen saturation of the blood in man, evidence has been accumulated to show that an actual lack of oxygen, in the sense of its availability to the tissues, actually occurs not only in experimental or other rare conditions but also in diseases of man. This has recently been shown anew to be true, for example, in cases of cardiac insufficiency and related conditions,[2] in some patients with pneumonia,[3] and even in epidemic (lethargic) encephalitis, in which an extreme type of shallow breathing develops.[4] It is logical, therefore, to consider seriously the possibility of adequate oxygenation in such persons. The difficulties do not lie in any danger from undue intake of oxygen, for no abnormal increase in vital processes occurs even when mixtures very rich in the gas are inhaled. The problem is rather one of technic of securing an actual introduction of more oxygen into the lungs under mechanical conditions of tolerable comfort. The usual haphazard methods of oxygen administration are of slight avail. With more effective breathing devices, Barach and Woodwell[5] of the Massachusetts General Hospital were able to increase the arterial saturation with oxygen through inhalation of the gas by patients with cardiac insufficiency. The venous saturation was also frequently increased accordingly. Relief of cyanosis and the slowing of the pulse were the outstanding objective changes. The blood pressure, vital capacity, arterial and venous carbon dioxid content, urinary excretion, and rate of respiration showed no definite changes from short periods of oxygen inhalation. Subjectively, the patients usually said they felt more comfortable or that their breathing was better, but they were rarely enthusiastic. In pneumonia the somewhat comparable results were sufficiently impressive to permit the conclusion that oxygen therapy has a rational rôle in the treatment of the disease. The Boston clinicians state that oxygen inhalation for one-half hour was sufficient in the mild or moderate cases of anoxemia to elevate the arterial saturation and cause clinical improvement. In the severe cases, from one to two hours was necessary. The effect of a single administration was, in the main, temporary. The effect of repeated and prolonged administration produced persistent beneficial changes in the oxygen saturation of the blood and in the pulse, breathing, color, comfort and mental condition of the patient. It cannot be stated too emphatically that to combat anoxemia, oxygen must be given effectively. The numerous evidences now on record pointing to the possibilities of helpful applications of oxygen inhalation should stimulate investigators to devise more ingenious and comfortable outfits for accomplishing the purpose aimed at. If the project is defensible, a way to accomplish it must soon be found.

2. Barach, A. L., and Woodwell, M. N.: Studies in Oxygen Therapy with Determinations of the Blood Gases, I, In Cardiac Insufficiency and Related Conditions, Arch. Int. Med. **28**: 367 (Oct.) 1921.
3. Barach, A. L., and Woodwell, M. N.: Studies in Oxygen Therapy, II, In Pneumonia and Its Complications, Arch. Int. Med. **28**: 394 (Oct.) 1921.
4. Barach, A. L., and Woodwell, M. N.: Studies in Oxygen Therapy, III, In an Extreme Type of Shallow Breathing Occurring in Lethargic Encephalitis, Arch. Int. Med. **28**: 421 (Oct.) 1921.
5. Barach and Woodwell: Footnotes 2, 3 and 4.

NEW INVESTIGATIONS ON ICTERUS

Some problems associated with the etiology and diagnosis of icterus have been attacked recently from two points of view: French investigators have considered chiefly the elimination of various constituents of the bile, while some Dutch physicians have studied bilirubin in the blood. Brulé,[1] who has been investigating the problem for several years alone and in conjunction with other French workers, places the greatest importance on the question of dissociation between the elimination of bile pigments (bilirubin and urobilin) and of bile salts. Both are found in the urine in cases of mechanical obstruction to the outflow of bile. In hemolytic icterus, only bile pigment is present (urobilin). In a third—the greatest—group of cases attributed to hepatic insufficiency, both groups can be present in the urine.

Hijmans van den Bergh[2] has investigated practically the same problem by another method; he applied the diazoreaction for a fairly exact determination of bilirubin in the blood serum (it is not present in blood corpuscles). Among other important results he found that there are two sorts of bilirubin in the blood serum, or at least that it reacts in different ways, according to whether its increase is due only to a mechanical obstruction or to other causes. This he calls dynamic icterus. The bilirubin of the mechanical icterus reacts with the diazoreagent in the uncoagulated serum ("direct reaction"), is largely adsorbed by the coagulum of proteins formed by alcohol, oxidizes more readily and is more readily excreted than bilirubin of the other group, which accounts for the fact, for example, that a hemolytic icterus usually does not excrete bilirubin, but urobilin only. This second group gives the reaction only when the serum has been coagulated by alcohol (indirect reaction). In normal serum a small amount of this kind of bilirubin is constantly present. It is considerably increased in pernicious anemia, while

1. Brulé, M.: Recherches récentes sur les ictères, Paris, Masson et Cie, 1919.
2. Hijmans van den Bergh: Der Gallenfarbstoff im Blute, 1918.

there is usually a low level of bilirubin in carcinoma. Diagnostic difficulties can arise only when metastases in the liver cause a mechanical retention, but then the reaction is direct and can even serve as the first sign of metastasis.

Icterus neonatorum, Lepehne [3] has confirmed, following van den Bergh's method, cannot be attributed to a mechanical stasis, for it gives the indirect reaction. The formation of bilirubin in the spleen in pernicious anemia and in some intoxications has been proved directly by comparison of the amount of bilirubin in the vessels. The question whether bilirubin can form outside the liver (e. g., also in extravasates) is definitely settled in the affirmative.

These researches are a classical example of the influence a method has on the results. Through both methods new facts and explanations have been derived. Brulé's "retention due to hepatic insufficiency" perhaps corresponds with van den Bergh's "dynamic icterus," or a combined dynamic and mechanical icterus. Retentions due to lesions of the hepatic ducts in Brulé's terminology are identical with mechanical icterus. The icterus due to blood changes is van den Bergh's pure "dynamic icterus." The yellow color of the skin cannot be considered the cardinal sign of icterus. The increased amount of bilirubin in blood which always precedes visible discoloration and which can be determined exactly, must now be our criterion.

QUINIDIN IN HEART DISEASE

Rarely has a drug made a stronger or more dramatic bid for immediate acceptance as a valuable therapeutic agent than has quinidin in auricular fibrillation. Emerging from its obscurity where it was known only to the few as an isomer of quinin, this compound has suddenly leaped into the bright light of popularity, winning instant applause because of its startling effects in certain types of cardiac irregularity. To see a heart that has been constantly irregular for one or two years because of a fibrillating auricle lose its lawless and rapid beat within a few hours under the influence of a small amount of this drug, and resume normal rhythm and rate and maintain these for months, must attract the attention of even the most skeptical clinician or the most confirmed therapeutic nihilist. Such a phenomenon announces the advent of a new and virile agent in the treatment of heart disease.

The conclusions of the few clinicians who have thus far reported their investigations are in remarkable agreement as to the fact that in about half of the cases of auricular fibrillation, quinidin is capable of restoring to the sino-auricular node the control of the heart, so that, for a time at least, the working of the heart is normal. Evidence is accumulating to the effect that this is due to the action of the drug on the auricle. In many cases, in addition to the disappearance of the arrhythmia there has been such subjective and objective improvement in other respects that it seems clear that one is dealing with an agent of power which, if rightly used, may be of great service in practical therapy.

But any new therapeutic agent that is proved to be of even slight value is liable to be misused. Physicians, like other people, are naturally optimistic as to treatment. We grasp eagerly at that which gives even frail promise of help; we are impressed only by the favorable in the medical report; we are unconsciously influenced by the skilfully constructed circular of the drug house that advocates the use of the remedy; the pressure from the public which clamors for something to be done in time of sickness warps our sounder judgment, and, before we are aware of it, we are participating in the indiscriminate and irrational use of remedial measures whose mode of action is but imperfectly understood, and which on closer analysis, or after disappointing or perhaps disastrous experience, are found to be of use only to a very limited degree. Thus, serums, vaccines, certain hypnotics and other drugs, as well as many surgical operations, have had their day of fanatic vogue before their real value has been slowly established.

If our readers will study carefully the three articles on quinidin that are printed in this issue of THE JOURNAL,[1] they will note that, while the authors are fascinated by the possibilities of the application of this drug in medicine, they are wisely conservative in their statements and frankly admit that much is yet to be learned concerning its proper use. Why is it without influence in 50 per cent. of cases of fibrillation? Why, when it is efficient, is the effect in such a large proportion of cases transitory? Is it of service especially in the more recent cases? Is it advisable to give it in conjunction with digitalis? What are the elements of danger in its employment? Can the alarming symptoms that sometimes follow its administration be guarded against? Does the possibility of their occurrence or of fatal consequences justify us in using the drug at all? While it may slow the heart and restore its rhythm, does it really increase the heart's efficiency? These and other similar questions are suggested by the reports that have been published up to the present. It is to be hoped that the solution of these questions will not be attempted by wholesale and indiscriminate adoption of the remedy by the profession in every type of rapid and irregular heart. Only unsatisfying and disconcerting personal impressions, perhaps serious consequences, will be the result of an unscientific investigation of this kind. The true facts concerning the drug will be arrived at only through a continuance of the methods adopted by those who have thus far written on the subject—thorough study of individual cases, careful daily records of findings, electrocardiographic

3. Lepehne: Series in the Deutsches Archiv für klinische Medizin, the latest, 135, Nos. 1 and 2, 1921.

1. Pages 1793, 1797 and 1800.

interpretation of the heart's action, necropsy control where possible, impartial and not hastily reached conclusions. Incidentally, such a study of this interesting drug may bring forth new facts concerning the mechanism of the normal and pathologic heart beat.

Current Comment

BACTERIA IN THE BILE FOLLOWING SPLENECTOMY

Maurizio Bufalini,[1] who has investigated the number of bacteria excreted by the bile in splenectomized guinea-pigs, found fewer organisms than in normal controls. The examination of the blood revealed the reason: There are decidedly fewer germs circulating in young animals in the first ten days after splenectomy than before such operations are performed. Bufalini is guarded in his conclusions and cites the views of other authors, who warn against generalization of results obtained in one species of animals or microbes. Yet these experiments add another instance of increased resistance of animals after splenectomy, in spite of the trauma thus inflicted. A similar fact is the increased resistance of red corpuscles of such an animal against hypotonic solutions and the increased resistance of the animals themselves against several hemolytic poisons—considering only the experiments performed on the normal spleen. The best results in pathologic cases were obtained by its removal in hemolytic icterus and in Banti's disease, and some good influence was apparent in cases of purpura with diminution of blood platelets. No bad results apparently follow the removal of the spleen. This is a sad fact for the views held by teleologists. The functions of this mysterious organ offer a promising field for research.

SMALLPOX AND VACCINATION IN RECENT MONTHS

In his History of England, Macaulay described smallpox as "the most terrible of all the ministers of death." "The havoc of the plague," he continues, "was far more rapid, but the plague visited our shores only once or twice within living memory; and the smallpox was always present, filling the churchyards with corpses, tormenting with constant fears all whom it had not yet stricken, leaving on those whose lives it spared the hideous traces of its power, turning the babe into a changeling at which the mother shuddered, and making the eyes and cheeks of the betrothed maiden objects of horror to the lover." One hundred and twenty-five years have elapsed since the first vaccination performed by Edward Jenner in 1796. Persons living today, when the great menace that once conquered even America is no longer feared, can scarcely appreciate the true significance of the tribute which Thomas Jefferson paid to Jenner in these words: "You have erased from the calendar of human afflictions one of its greatest. Yours is the comfortable reflection that mankind can never forget that you have lived; future nations will know by history only that the loathsome smallpox has existed, and by you has been extirpated." In the light of these comments, it seems almost incredible that the U. S. Public Health Service should find it possible to report more than 16,000 cases of smallpox in eight states alone in which the histories were furnished in 1920; while, from information supplied by only seven states, more than 18,000 cases have been reported with history during the first six months of the present year. In Minnesota, for example, 8,238 of these smallpox cases were actually reported.[1] The real lesson, however, is to be found in the statistics of vaccination for this formidable array of patients. More than two thirds of the entire 34,000 afflicted had never been successfully vaccinated. About one twentieth of them had been vaccinated more than seven years before the attack; and, of the remainder, the histories were in most cases uncertain with reference to their vaccination status, or were not obtained. Only 2 per cent. of the patients were actually reported to have been vaccinated within seven years prior to the attack. Again the lesson to the public is clear and imperative—and there is little left for the consolation of the antivaccination cult, which is doubtless responsible directly or indirectly for some of this unnecessary suffering.

WHITE HAIR

Accounts of the sudden loss of color in hair are occasionally found in popular literature, and legendary accounts of phenomenal blanching of the hair over night or within relatively brief periods are widespread. One explanation advanced is that the white appearance is due to the entrance of air into the hair—a conception recently reiterated by the physical chemist Bancroft [2] of Cornell University. Strong [3] had previously expressed a doubt, based on microscopic examination, whether gray hairs ordinarily contain any more air or other gaseous material than do colored hairs. Recently he [4] has pointed out anew that hair consists of numerous cornified epithelial cells more or less incompletely fused together. In the case of human hair, most of the structure is cortical. These cells furnish a vast number of external and internal reflecting surfaces, as can easily be seen by placing a white hair on the microscope stage with no mounting fluid. When pigment is present, the incident light is more or less extensively absorbed, according to the amount of pigment, before reaching the deeper cells. The amount of undispersed light reflected depends, of course, on the number of internal reflecting surfaces not screened by pigment. There is always some reflection of undispersed light by the hair cuticle, no matter how much pigment is present. Admitting that white in hair structures is due to failure of pigment formation in the follicle before cornification takes place, the blanching of hair must be a slow process determined by the rate of its growth. Consequently the reports of sudden blanching of the hair must be regarded as inherently improbable.

1. Bufalini, Maurizio: Sperimentale **75**: 437, 1921.

1. Vaccination Histories of Smallpox Patients, Pub. Health Rep. **36**: 2555 (Oct. 14) 1921.
2. Bancroft, W. D.: Applied Colloid Chemistry, 1921, p. 198.
3. Strong, R. M.: Observations on Gray Hair and Alleged Sudden Blanching of Hair, Anat. Rec. **14**: 52 (Jan.) 1918.
4. Strong, R. M.: The Causes of Whiteness in Hair and Feathers, Science **54**: 356 (Oct. 14) 1921.

Association News

ST. LOUIS SESSION

Hotel Headquarters for the Scientific Sections

The Local Committee of Arrangements for the annual session to be held in St. Louis, May 22-26, 1922, has designated the following headquarters for the Sections of the Scientific Assembly:

Section	Headquarters
Practice of Medicine	Hotel Statler
Surgery, General and Abdominal	Hotel Jefferson
Obstetrics, Gynecology and Abdominal Surgery	Hotel Claridge
Ophthalmology	Planters Hotel
Laryngology, Otology and Rhinology	Marquette Hotel
Diseases of Children	American Hotel
Pharmacology and Therapeutics	American Annex
Pathology and Physiology	American Annex
Stomatology	Warwick Hotel
Nervous and Mental Diseases	Majestic Hotel
Dermatology and Syphilology	Majestic Hotel
Preventive Medicine and Public Health	Warwick Hotel
Urology	Maryland Hotel
Orthopedic Surgery	Hotel Jefferson
Gastro-Enterology and Proctology	Maryland Hotel

Dr. Louis H. Behrens is chairman of the Subcommittee on Hotels. He may be addressed at the office of the Local Committee of Arrangements, 3525 Pine Street, St. Louis.

The Subcommittee on Hotels requests those desiring hotel reservations to write directly to the hotel of their choice. It also suggests that this shall be done at an early date and that duplicate reservations shall not be made. If difficulty is experienced in securing the desired accommodations, the hotel committee on request will assist in every way possible. Arrangements have been made with the several hotels so that all communications will be referred to the Subcommittee on Hotels in case the hotel addressed is unable to provide the desired accommodations.

CONFERENCE OF CONSTITUENT STATE MEDICAL ASSOCIATIONS

(Continued from page 1744)

Second Meeting—Friday Afternoon, November 11

SYMPOSIUM ON COOPERATION BETWEEN THE CONSTITUENT AND COMPONENT BRANCHES AND THE AMERICAN MEDICAL ASSOCIATION

(a) Cooperation in Organization

Dr. Alexander R. Craig, Chicago: From the time of its origin, the germinal idea of both the House of Delegates and the Scientific Assembly was recognized in the conducting of our annual sessions. In reality, in the reorganization at St. Paul, in 1901, only three modifications were made from the methods that had been followed previously: (1) The right to representation was restricted to constituent state associations; (2) the number of delegates was limited to 150 (at the St. Paul session, 1,767 "delegates" were registered); (3) the delegate body was dignified by giving to it a distinguishing name, the House of Delegates, and by assigning to it a place for holding its meetings separate from those at which the scientific program was presented. The reaction they effected in the constituent state associations was wonderful. Instead of no relationship or an extremely loose tie that almost universally existed between state associations and county or district medical societies, these local organizations quickly assumed the intimate association, as component branches, with the state bodies, and the latter acknowledged themselves as federated into the American Medical Association. Instead of functioning for but three or four days each year during these annual sessions, the state associations maintained their activities without cessation. Immediately all branches of the organization commanded an increased interest, and membership and Fellowship increased rapidly. It is an interesting fact that since 1901 this Fellowship has increased from 9,841, Jan. 1, 1901, to 53,404, Nov. 1, 1921, and that the membership now numbers 87,816.

As executive officers of this organization, we may congratulate ourselves on the machinery that has been built up. But we must remind ourselves that even so perfect an instrument is inert except as we supply it with a living force. The accomplishment of the organization's objects depends far more on our efforts than on the machinery that is at our command.

Within a year or two after the reorganization, practical uniformity was attained in the essential features of organization. This rapid development undoubtedly was due largely to the suggestion made by the Committee on Organization that each of the state associations should maintain a council and that each of the councilors should be "organizer, peacemaker and censor for his district." In a word, this council served as the Committee on Organization in the state association. In some of the states the councilors have continued to stimulate the activity of the county societies; in others, the councilors have not been active. In fact, in a few of the states the council has been relieved of responsibility for maintaining the organization because those who held the office neglected the services that the Council could have rendered. At present, the council in many instances is regarded merely as a court of appeal in judicial matters. This is a mistake. The council should not only serve as a court, but it should also be in fact the active agent for guiding the organization within the state. The councilors should perform services similar to those undertaken by the district superintendents in the Methodist Church, or by the deputy grand masters in the masonic order; i. e., they personally should visit, correspond with, and through other means supervise and stimulate the activities of the county societies. To do this work effectively will entail considerable thought and effort.

The value of reports at frequent and regular intervals from the component county medical societies to the state secretary should be emphasized. Each meeting of a component society should be reported to the state secretary. If a system of regular reports was in effect, these would give the state secretary an opportunity to check back and to know what county societies are active and which ones are failing to function.

Another fundamental principle of organization is that the component societies should furnish to every honorable physician within their jurisdictions an opportunity to obtain membership, to advantage by the social and material stimulus and the educational opportunities incident to his union with his professional confrères. At the same time, it is incumbent on the component county societies to maintain proper discipline over the members of the organization; that is to say, physicians who exploit the public, who fail to appreciate their responsibility to their profession, should be called to task by their fellows in the profession and should be made to conform to the established ideals which have for their purpose the service to be rendered to the public.

On the average, possibly from 60 to 70 per cent. of the licensed physicians who are actively engaged in the practice of their profession nominally are members of our county medical societies. The proportion varies in different localities. The active cooperation of each member in the welfare of the organization should be secured.

The county societies should be assisted in developing the social as well as the scientific features that will interest and hold the members. Too frequently the social life of the local society is neglected. While providing for advancing friendly relations between physicians, most careful attention should be given to developing the scientific work in the local societies. The executive officers of the state associations, the secretary and the councilors particularly, can render a valuable service by stimulating this latter phase of the work.

One of the problems that the organization should consider is found in the statement that there are numerous communities throughout the United States, especially in the less densely populated areas, where the people are alleged to be suffering because of an insufficient supply of physicians. If this is true, the organization is responsible for meeting a serious public need. First of all, the facts in the case should be determined. The organization is competent to do this through an investigation that could be carried out by each state association in

cooperation with its component county branches. Any need found to exist could be supplied in large part through publicity in the official organs of the state medical associations with the cooperation, when needed, of THE JOURNAL of the American Medical Association.

(b) Cooperation with State Medical Associations

DR. N. P. COLWELL, Chicago: The reorganization that has taken place in medical education during the last seventeen years was made possible by the cooperation and support which the Council received from the medical profession represented by the various state medical associations. Since it was created in 1904, the Council on Medical Education has been in almost constant touch with these associations. The Council at once urged the appointment of state committees on medical education, and by 1906 these had been appointed in forty-five cases. Through these committees the state societies were kept informed in regard to the educational standards proposed by the Council, to the changes needed in medical education and the progress being made.

In the work with hospitals there has been an increasing cooperation between the Council and the state medical societies. The work of the American Medical Association with hospitals began in 1904, when a list was prepared for publication in the American Medical Directory and a large amount of detailed information in regard to all hospitals was collected.

In 1912, to encourage the general adoption of the intern year the Council made a special survey of all hospitals. A circular letter was sent to the 2,424 hospitals having twenty-five or more beds asking especially in regard to the use of interns. Replies were received from 2,185, or 90 per cent., and, of those replying, only 852 were regularly using interns and provided places for 3,006 medical graduates. In many of these hospitals the internships extended over eighteen months or two years so that places were available for only about 2,000 of the 4,000 students, approximately, who were being graduated each year.

In 1913 a questionnaire was sent to all hospitals asking for information, and on the basis of these reports a provisional list of hospitals approved for intern training was prepared. A proof copy of this list was sent to a committee of three prominent physicians in each state, who checked the list, eliminating unworthy hospitals and adding the names of others which deserved to be included. Following this revision in 1914, the first list of hospitals approved for intern training was published, and in 1915 a complete list of the state committees was published. There was still an unsufficient number of internships available to provide places for all graduates.

In 1915, a second questionnaire was sent to all hospitals having fifty or more beds. Besides the information thus collected, numerous inspections and further investigations were made by state committees, so that in 1916, a more reliable and complete list of hospitals approved for intern training was published. In the third general survey of hospitals, which was begun in 1918, the state advisory committees again took a prominent part. The total bed capacity of hospitals then seeking interns was 270,500 and, to meet the demand, approximately 6,000 interns were needed. Not all these hospitals could be supplied with interns, even if the number of students graduating annually were doubled—a decided change from the situation in 1915. This greatly increased demand for interns was undoubtedly due to the improved standards of medical schools whereby their graduates were better qualified.

Whatever work may be done in the improvement of hospital service, no organization occupies a position so advantageous as that of the American Medical Association with its various state organizations. The work will hereafter deal with all hospitals, and it is proposed to establish lists not only of those approved for intern training, but also of those which are worthy of approval as nonintern hospitals.

(c) Cooperation in Legislation

DR. FREDERICK R. GREEN, Chicago: Education of the public has produced innumerable special societies, each demanding special laws to secure its particular ends, without cooperation or coordinated plan of campaign. These organizations have created many salaried positions. This has produced the professional social welfare worker.

All our state and city boards of health have been created in the last fifty years. Bills authorizing new health organizations, enlarging the powers of existing bodies or asking for increased appropriations and personnel, come before every legislature. Efforts to regulate and restrict the practice of medicine have resulted in numerous bills. Like the homeopaths and eclectics of fifty years ago, the osteopaths, optometrists, chiropractors and others keep up a continual agitation. Individual enthusiasts, fanatics and cranks contribute their quota, while ambitious politicians promote schemes for social and sanitary reforms.

As a result of all these causes, every legislative body is now deluged at every session with bills on every conceivable phase of health and control of disease. It is impossible even to list the various measures. Seven years ago, there were introduced into the forty-two state legislatures then in session more than 1,000 public health bills. The legislative committee of one state society endorsed thirty-five bills, presumably only a fraction of the total number introduced. Every organization, faction and sect has measures which it is promoting. We have had for the last twenty years an orgy of legislation. Apparently the American people are going to be made healthy and moral in spite of themselves, if it can be done by law.

In this legislative scramble, there has been no system and little discrimination. Many proposed laws, such as sterilization and so-called eugenic laws, have been impossible of enforcement or unconstitutional in their provisions. An immense amount of effort has been wasted in experiment. One state is seeking to adopt what another state is trying to repeal. We have no policy and no objective.

It is conceded that much of our progress in health conservation has been due to proper laws. A certain amount of law enactment in this field is necessary. But efforts to accomplish all kinds of social and sanitary reforms by laws have reached a point where a definite policy and a definite program have become absolutely necessary, in order to separate the good from the bad, the useful and constructive from the visionary and fantastic, and the practical and effective from the unpractical and meddlesome.

The reorganization of the American Medical Association in 1902 made it possible to undertake activities that had been discussed for fifty-five years. The substitution of a House of Delegates of 150 members for a mass meeting of 2,000 created a small compact working body for the effective transaction of business. The result has brilliantly justified the change.

The development of THE JOURNAL, under the masterly direction of its editor, has placed the Association on a sound financial basis. But the reorganization has had little effect on the other problems of the profession. Nearly twenty years have elapsed. Our organization today is like an army that has been engaged in a protracted campaign involving long marches over a wide territory. We have a highly organized headquarters and general staff, but it is too far from the headquarters to the firing line and the different parts of the army have gotten out of touch with each other. Instead of an organized, disciplined army, carrying on a single plan of campaign, we are rather groups of skirmishers, each group carrying on its own fight without regard to the other units involved. To use the phraseology of the late war, we have no liaison service. We need to consolidate and organize our outposts, to close up the gaps in the line, and, above all, to establish better communications between our different units, and especially between headquarters and the field.

We have plenty of machinery, but it is not coordinating. We need to connect up the different parts, to work out a definite policy and plan of campaign that can be followed by all our units.

The first essential for effective cooperation is definite knowledge. Just as the proprietary medicine and nostrum problem was vague and ill defined until THE JOURNAL established the Council on Pharmacy and Chemistry and its laboratory for the analysis of these products and the preparation of specific reports, so legislative problems cannot be solved without thorough study.

The Hughes law, passed three years ago in Ohio after a long educational campaign, was probably the best law ever drafted for whole-time county health officers. It was held unconstitutional on account of the classification of cities, a question which had nothing to do with its health provisions. This spring, the Illinois Supreme Court declared the Illinois Medical Practice Act of 1917 unconstitutional, because the requirements for the professional education of drugless healers were discriminatory and inequitable, a point which has been repeatedly passed on by supreme courts in many states. No one can draft a sound law without knowing what the courts have already decided regarding the questions involved. The collection, digesting and indexing of all supreme court decisions on public health was taken up ten years ago by the Council, and is now practically completed.

It is only through close cooperation between headquarters and the leaders in the field that a practical plan of campaign and a policy can be worked out. No one man is big enough and wise enough to do it. It can only be developed by combining all our knowledge, wisdom and experience. Most health problems are state and local problems and their solution, so far as they can be solved by legislation, comes under the police power of the state. The most important part of our machinery must always be the state medical association working through its legislative committee, or, as in California, Oregon and Washington, through auxiliary bodies.

The National Legislative Committee, made up of the chairmen of the various state committees, meeting with the Council at least once a year or oftener for the discussion of legislative policies, will form the connecting link between the national and the state organizations. Instead of meeting at the time of the midwinter conference as heretofore, it should meet in the fall, so that there will be ample time after the meeting for the chairman of the national and state committees to communicate with the other members of the committee and with the county committeemen and to work out plans for the coming session of the legislature.

The proposed plan involves coordination of existing rather than creation of new machinery. It includes:

1. A state legislative committee of which the chairman shall be the member of the National Legislative Committee; each state committee made up of as many members as may be advisable but including the president, the secretary and the attorney for the state association as ex-officio members. This committee should have permanent headquarters and the necessary equipment to carry on its work.

2. The National Legislative Committee, made up of the chairmen of the state legislative committees, to meet at least once a year with the Council to map out a program for the coming year; the expenses of the committeemen in attending this conference to be paid either by the American Medical Association or the state association or both. This National Legislative Committee would be to the American Medical Association what the Republican and Democratic National Committees are to their parties.

3. The Council on Health and Public Instruction of the American Medical Association, as the legislative committee of that body, charged with the responsibility of formulating the policy of the Association on national questions, and of maintaining at the headquarters office a legislative laboratory in which material on legislative questions can be prepared for state legislative committees.

4. Frequent joint meetings of the legislative committees of neighboring states, to be attended by the officers and committees of the groups of states and by the secretary of the Council for the discussion of conditions and plans. These conferences to be held long enough before the meetings of the state legislatures to allow ample time for carrying out any plans agreed on. The expenses of the members in attending these meetings to be paid by the American Medical Association, the state associations paying a part, as and when they may be able to do so. These conferences would enable the state committees to agree on a united plan of action and would make it possible for the secretary of the Council to learn at first hand of conditions in each state and to tell each committee or group of committees what is going on in other states.

(To be continued)

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

[READ THE FIRST EDITORIAL IN THIS ISSUE—AND ACT]

Hospital Dedicated.—St. Elizabeth's Hospital was recently opened in San Francisco under the Sisters of Charity, to be operated for the care of unmarried mothers and their babies.

Personal.—Dr. Henry S. Rogers has been appointed health officer and secretary of the board of health of Petaluma, to succeed Dr. Arthur G. Lumsden, who is still on the board. The health board voted a year ago that each officer on the board should take the office of health officer for one year and then be succeeded by another member.

Medical Practice Law Upheld.—The federal court of California recently brought in a decision denying the restraining order asked for by W. Frank Willis, a chiropractor, to prevent the board of medical examiners from enforcing the provisions of the medical practice act as applying to chiropractors. This practically ends the case, since the constitutionality of the California practice law has already been confirmed by the United States Supreme Court.

Appointment to Study the Narcotic Evil.—The governor has appointed Dr. John A. Reily, medical superintendent at Patton, as a member of the committee created by the last session of the legislature to study the narcotic evil, and if deemed advisable recommend the construction of a hospital for the care of narcotic users. The committee will report at the next session of the legislature. At the present time narcotic addicts are treated at the hospitals for the insane.

Convictions for Illegal Practitioners.—Recent news items state that Fred J. Oakes of San Francisco and M. J. Holt of Oakland, both chiropractors, were convicted of practicing in violation of the medical practice law.——It is reported that on November 9, E. B. Hubley, a chiropractor, who three or four years ago advertised extensively in the Los Angeles papers as "Backbone" Hubley, was convicted of violating the practice law of California and is said to have paid a fine of $200.

Hospital News.—Bids for constructing the psychopathic ward of the county hospital will be opened, December 27. The specifications call for an expenditure of approximately $25,000. According to a statement of plans by Dr. Harry E. Zaiser, superintendent, there will be a miniature court room where persons alleged to be insane and considered violent will be brought, instead of before a public court. The ward will contain twelve rooms, six on each floor, and wire mesh will be used instead of iron bars. Well equipped hydrotherapy and electric baths will be installed in the basement.

COLORADO

[READ THE FIRST EDITORIAL IN THIS ISSUE—AND ACT]

Medical Society Organized.—The physicians of Yuma have organized the Yuma Medical Society, with Dr. George B. Bilsborrow as president and Dr. John P. Ham, secretary.

Campaign for New Hospital and Medical School.—The University of Colorado is waging an active campaign to raise the remaining $200,000 necessary to insure the erection of the new medical school and state hospital. Toward the $1,500,000 which the project will cost, the General Education Board has pledged $700,000 and the state has appropriated $600,000, both sums contingent upon the raising of the $200,000 balance by the university. An effort will be made to obtain one dollar from each of 200,000 citizens of Colorado.

CONNECTICUT

[READ THE FIRST EDITORIAL IN THIS ISSUE—AND ACT]

Yale Silliman Lectures.—Dr. Clemens Pirquet, professor of children's diseases, University of Vienna, Austria, began a series of Silliman lectures at Yale University, December 1, under the general topic of "Modern Pediatrics."

FLORIDA

[READ THE FIRST EDITORIAL IN THIS ISSUE—AND ACT]

Organization of Health Units.—As a result of agreement between the state board of health and international health board of the Rockefeller Foundation, the state can maintain in four counties a staff of trained workers consisting of a physician, a sanitary inspector and several public health nurses. Dr. Platt W. Covington has been lent to the state to assist in organizing the health units.

GEORGIA

[READ THE FIRST EDITORIAL IN THIS ISSUE—AND ACT]

Proposed Cancer Hospital.—According to a recent action taken by the joint hospital and charities committees of the city council, the proposed cancer hospital and clinic at Grady Hospital, made possible by the $500,000 bequest of the late Albert Steiner, will be entirely apart from the control of the hospital and charities committee of the city council, and will be supervised by the trustees for Mrs. Steiner. The cost of the building is estimated at $100,000, and it will be equipped with modern radium and roentgen-ray furnishings at a cost of about $150,000. An expert will be employed to take charge of the cancer ward. This will make Grady the first hospital south of Baltimore to be specially equipped for the treatment of cancer. The operation and maintenance of the ward will be provided from the income of the balance of the Steiner fund and the proceeds from patients who will pay for diagnosis or treatment. The city of Atlanta will furnish nurses, food, heat, light, water and the necessary janitor service.

ILLINOIS

[READ THE FIRST EDITORIAL IN THIS ISSUE—AND ACT]

New Office Created for St. Clair County.—By action of the board of supervisors, the office of assistant county physician for the indigent colored residents of East St. Louis and Stites townships has been created. Dr. Newman M. Sykes was elected to the office.

County Medical Society Meeting.—A meeting of the Sangamon County Medical Society was held, November 14, at Springfield, under the presidency of Dr. Harrison C. Blankmeyer. Dr. Max Einhorn, professor of medicine of the New York Post-Graduate Medical School and Hospital, spoke on "Recognition and Treatment of the Minor Disturbances of the Digestive System." Dr. Einhorn also conducted a clinic at St. John's Hospital in the afternoon preceding the meeting.

IOWA

[READ THE FIRST EDITORIAL IN THIS ISSUE—AND ACT]

Iowa Medical Women.—The new officers for 1922 of the State Society of Iowa Medical Women are: president, Dr. Josephine Wetmore Rush, Mason City; vice president, Dr. Jennie M. Coleman, Des Moines; treasurer, Dr. Eleanor M. Hutchins, Woodward, and secretary, Dr. Julia F. Hill, Grinnell.

MARYLAND

[READ THE FIRST EDITORIAL IN THIS ISSUE—AND ACT]

Personal.—Dr. William S. McCann has assumed his new duties as associate professor of medicine at the Johns Hopkins Medical School. Before coming to Baltimore, Dr. McCann was instructor in medicine at Cornell University Medical School and assistant visiting physician at Bellevue Hospital, New York.

Lecture on Child Hygiene.—The regular lecture at the Johns Hopkins University School of Hygiene and Public Health was given, November 28, at the school. Dr. S. Josephine Baker, director, Bureau of Child Hygiene, Department of Health, New York, spoke on "The Place of Child Hygiene in a Public Health Program."

MINNESOTA

[READ THE FIRST EDITORIAL IN THIS ISSUE—AND ACT]

History of Hennepin County Medical Society.—Dr. Arthur E. Benjamin, Minneapolis, has written and presented to the society a history of the Hennepin County Medical Society from its organization. This history contains the names of officers from the beginning and of 156 deceased members, and also gives the names of ninety-two members who have moved from the city.

NEW JERSEY

[READ THE FIRST EDITORIAL IN THIS ISSUE—AND ACT]

Dr. Costill Honored.—The Mercer County Medical Society turned its annual banquet, November 9, into a testimonial dinner to Dr. Henry B. Costill, Trenton, president of the New Jersey State Medical Association.

Health Meeting.—A joint session of the forty-seventh annual meeting of the New Jersey Sanitary Association and the fifteenth annual meeting of the New Jersey Tuberculosis League will be held at Laurel-in-the-Pines, Lakewood, December 9-10. Among the speakers are: Dr. James Alexander Miller, president of the National Tuberculosis Association, who will discuss "The Newer Aspects of the Tuberculosis Movement," and Dr. Theobald Smith, Rockefeller Institute for Medical Research, Department of Animal Pathology, Princeton, who will speak on "Bovine Tuberculosis s a Contributory Source of Human Tuberculosis."

NEW YORK

[READ THE FIRST EDITORIAL IN THIS ISSUE—AND ACT]

Personal.—Dr. Starr C. Hollis has been appointed as health officer and registrar of vital statistics of Adams for a term of four years beginning Jan. 1, 1922.

New York State Society of Industrial Medicine.—The annual meeting of this organization will be held at the Onondaga Hotel, Syracuse, December 10. A symposium on "Industrial Medicine and Its Relation to the New York State Compensation Law" will be held. Dr. Patrick H. Hourigan of Buffalo is president.

Institute in Public Health Nursing.—The New York State Department of Health is conducting a two weeks' institute in public health nursing in Albany from November 28 to December 10. The course will consist of lectures and field work. No fee is required. Further information may be obtained by addressing Dr. Charles C. Duryee, state department of health, Albany.

New York City

A Plea for the Hospitals.—William Fellowes Morgan, chairman of the executive committee of the United Hospital Fund, has issued a statement asking the support of the entire city for the city's hospitals. He states that the hospitals must have each year $4,000,000 in gifts in addition to their earnings and endowments. The annual campaign to raise this fund is under way.

NORTH CAROLINA

[READ THE FIRST EDITORIAL IN THIS ISSUE—AND ACT]

Ninth District Medical Meeting.—At a recent meeting of the Ninth District Medical Society, held in Salisbury, Dr. George A. Ramsauer, China Grove, was elected president, Dr. Minor R. Adams, Statesville, vice president, and Dr. Isaac W. Taylor, Morganton, secretary. The society will hold its meeting next year at Morganton, the last Thursday in October.

OHIO

[READ THE FIRST EDITORIAL IN THIS ISSUE—AND ACT]

Summit County Medical Society.—At the meeting of the society, held, November 3, Dr. William A. Cochrane of Edinburgh, Scotland, gave an address on "The Treatment of Injuries of the Hand and Wrist."

Trumbull County Medical Association.—At the recent meeting of the society, held at Warren, Dr. Lawrence Litchfield, Pittsburgh, spoke on the "Practical Consideration of the Patients Instead of the Disease."

Cancer Clinic.—During cancer week a permanent cancer clinic was opened at Columbus. The medical staff is composed of Drs. Andre Crotti, Columbus, medical director; James F. Baldwin, Columbus, consulting surgeon, and Wells Teachnor, president of the Ohio State Medical Association. Sessions of the clinic will be held every Tuesday and Friday from 2 to 4 p. m.

PENNSYLVANIA

[READ THE FIRST EDITORIAL IN THIS ISSUE—AND ACT]

Personal.—Dr. Edwin D. Funk, Reading, formerly associated with the department of pathology in the Jefferson Medical College Hospital at Philadelphia, has assumed his duties as resident pathologist to the Reading Hospital.

County Societies Pass Resolutions Against the Use of Beer as Medicine.—The Washington County Medical Society and the Venango County Medical Society, at recent meetings of their organizations, went on record against the use of beer as medicine.

Philadelphia

Scarlet Fever Cases Increase.—A total of 143 new cases of scarlet fever were reported to the bureau of health the week of November 21, compared with ninety-five for the week before.

Municipal Radium Clinic.—Philadelphia opened the first municipally owned and operated radium treatment clinic in the United States, November 30, at the Philadelphia General Hospital.

New Trustees for Jefferson College.—Five newly elected trustees of Jefferson Medical College are: Robert P. Hooper, R. Sturgis Ingersoll, James M. Willcox, John H. McFadden, Jr., and Benjamin Harrison Brewster, Jr.

Hospital Celebration.—The fiftieth annual celebration of the incorporation of the Presbyterian Hospital at Thirty-Ninth Street and Saunders Avenue was held at Witherspoon Hall, November 25. The Rev. Dr. Marcus A. Brownson opened the meeting with prayer, after which there were addresses by Henry N. Paul, president of the hospital; Dr. William E. Hughes, of the medical staff; John H. Finley, president of College of the City of New York, and Dr. John B. Deaver.

Appointments to the University of Pennsylvania School of Medicine.—Dr. Glen E. Cullen has recently been elected associate professor of research medicine, and Dr. Goldschmidt, former lecturer in physiology in the School of Medicine, Cornell University, Ithaca, N. Y., has been elected assistant professor of physiology in the School of Medicine. Dr. James Harold Austin was elected, last spring, professor of research medicine, to succeed Dr. Richard M. Pearce, who resigned to accept a position with the Rockefeller Foundation.

Personal.—Dr. Sydney R. Miller, Baltimore, president, American Congress of Internal Medicine, addressed the section on general medicine of the College of Physicians of Philadelphia, November 25, his subject being "The Utilization of Laboratory Methods."——Dr. William P. Graves, professor of gynecology, Harvard Medical College, addressed the Obstetrical Society of Philadelphia at the annual invitation meeting, December 1, in Cadwalader Hall, College of Physicians, his subject being, "The Development and Function of the Ovary." A reception and buffet supper at the Rittenhouse Hotel immediately followed the scientific program.

PHILIPPINE ISLANDS

[READ THE FIRST EDITORIAL IN THIS ISSUE—AND ACT]

Maternity Hospital at Lingayen.—A maternity hospital has been established at Lingayen, Pangasinan, through the help of the Insular government, which augmented the fund of the puericulture center in Lingayen. The staff of the hospital consists of one physician, one nurse and one apprentice nurse, who is at the same time in charge of the puericulture center.

RHODE ISLAND

[READ THE FIRST EDITORIAL IN THIS ISSUE—AND ACT]

Physician Elected to State Legislature.—Dr. Edgar F. Hamlin, Slaterville, president of the Woonsocket District Medical Society, has recently been elected to succeed Joseph E. Kelly, Waterford, in the general assembly.

WISCONSIN

[READ THE FIRST EDITORIAL IN THIS ISSUE—AND ACT]

Appointment on State Board of Medical Examiners.—Dr. Robert B. Cunningham, Cadott, has been appointed by the governor as a member of the state board of medical examiners for a term to expire July 21, 1925.

State Department of Health Appointment.—Dr. Henry B. Sears, Beaver Dam, has been appointed by the state board of health as deputy state health officer for the northwest district of Wisconsin, with headquarters at Eau Claire, to succeed Dr. Valentine A. Gudex, who has been assigned to the state department at Madison in the bureau of communicable diseases.

Resolution to Curb Drug Traffic.—The Milwaukee County Medical Society has taken its first step to curb the drug traffic in Milwaukee County. At a meeting of the society held, November 10, the president, Dr. John J. Seelman, presented a resolution asking the society to go on record favoring laws which will help curb the illicit traffic in narcotic drugs, and urging the society to back any movement which will provide institutions for the treatment of addicts. Wisconsin legislators at Washington, D. C., are urged to introduce or support legislation to curb the drug traffic.

Tri-State District Medical Meeting.—The Tri-State District Medical Association held a four-day session at Milwaukee, November 14-17, under the presidency of Dr. George V. I. Brown, Milwaukee. The following officers were elected: Dr. James R. Guthrie, Dubuque, Iowa, honorary president, and Dr. William J. Mayo, Rochester, Minn., honorary president of clinics; Dr. John E. O'Keefe, Waterloo, Iowa, president; Dr. Horace M. Brown, Milwaukee, president elect; vice presidents, Dr. Joseph Evans, Madison, Wis., Dr. Edwin P. Sloan, Bloomington, Ill., Dr. George Fuller, Keokuk, Iowa; managing director, Dr. William B. Peck, Freeport, Ill.; secretary-treasurer, Dr. Domer G. Smith, Freeport, Ill. Peoria, Ill., was selected as the meeting place for 1922, and Des Moines, Iowa, as the 1923 convention city.

CANADA

[READ THE FIRST EDITORIAL IN THIS ISSUE—AND ACT]

Surgeon Wounded.—Sir Andrew McPhail, professor of medicine, McGill University, Montreal, and editor of the *Montreal Medical Journal*, was shot in the shoulder, November 15, at this home, by Lewis Ogulnic, who later committed suicide.

Additional Provision for Welfare Work.—Dr. Charles J. Hastings, medical officer of health, Toronto, has been successful in obtaining a further grant from the city to enable the health department to carry on its social welfare work until the end of the year.

Opening of New Medical College.—Recently, the new medical college of the Western University at London, Ont., was formally opened by the provincial minister of education, the Hon. Dr. Grant. The college was erected and equipped at a cost of half a million dollars. In his address, Dr. Grant urged upon the citizens of the community the necessity for local assistance and financial support to the university.

Personal.—Dr. William E. Sinclair, formerly resident physician in the Babies' Hospital, New York City, has recently established himself in practice in Toronto.——Dr. Wilfred T. Grenfell, in an address before the Empire Club, Toronto, told of the efforts to combat beriberi, prevalent in the isolated districts of Newfoundland and Labrador, by the hospitals he has established on the Labrador coast. Dr. Grenfell will continue his campaign during the winter for permanent endowment of the hospitals, schools and orphanages in Labrador and Newfoundland.

Graduate Courses at University of Toronto.—As a result of the success of the graduate courses held some time ago by the Faculty of Medicine of the University of Toronto, arrangements are being made for similar courses next month. Provision has been made for three courses, one in medicine, one in surgery, and one in obstetrics and gynecology to be run concurrently from December 19 to December 24. Under this arrangement it will be possible for a candidate to avail himself of more than one course. Registration will be limited in medicine to sixty students, and in surgery to thirty. Clinics will be held twice each day. It is considered that a week's concentrated work in a large hospital will produce better results than it is possible to obtain in the extension lectures that are given throughout the province by the faculty.

GENERAL

[READ THE FIRST EDITORIAL IN THIS ISSUE—AND ACT]

Tri-State Medical Meeting.—The seventeenth annual meeting of the Tri-State Medical Society, which includes the states of Louisiana, Arkansas and Texas, will be held at Shreveport, La., December 6-7, under the presidency of Dr. Frank H. Walke, Shreveport.

The Academy of Ophthalmology and Oto-Laryngology.—It has been announced that the next annual meeting will be held, Sept. 18-23, 1922, at Minneapolis, where the academy will be entertained by the Minneapolis Academy of Ophthalmology and Oto-Laryngology, and the various meetings will be held on the campus of the University of Minnesota.

Appointment to National Research Council.—Dr. E. D. Ball has been appointed by Secretary Wallace as the representative of the Department of Agriculture on the research information service of the National Research Council to take the place of Dr. Carl L. Alsberg, resigned. The secretary has also named Dr. Frederick B. Power, for many years director of the Wellcome Research Laboratory of London and now in charge of the phytochemical laboratory of the bureau of chemistry, as a representative of the bureau in the division of federal relations in the place of Dr. Alsberg.

The Southern Medical Association.—The fifteenth annual session of the association was held at Hot Springs, Ark., November 14. Dr. Seale Harris, Birmingham, Ala., was elected president, and Dr. William C. Dabney, Augusta, Ga., secretary. The next annual meeting will be held at Chattanooga, Tenn. In compliance with the established custom of recognizing the greatest work accomplished during the year by a member in the interests of humanity and the scientific advancement of surgery, the retiring president, Dr. Jere L. Crook, Jackson, Tenn., bestowed a gold medal on Dr. Kenneth M. Lynch, Charleston, S. C., for his laboratory work and accomplishments in the study of tropical medicine.

Medical Items in Congressional Appropriations.—The first deficiency appropriation bill presented to Congress, which promptly passed the House of Representatives, contains many items for medical and hospital services. The sum of $150,000 is appropriated for continuing the construction of the Gallinger Hospital in the District of Columbia. For the improvement and betterment of medical and hospital services by the U. S. Veterans' Bureau, $25,000,000 is appropriated, while $40,000,000 is appropriated for vocational education of ex-service men. The U. S. Public Health Service is allowed $635,000 to be used for medical, surgical and hospital work, for quarantine service and to cover incidental expenses of transportation; $1,000 is appropriated for the prevention of epidemics, and $106,500 for the support of the National Home of Disabled Soldiers at Hampton, Va. After its passage by the House, the measure went to the Senate and will be taken up at the regular session in December.

Regulations Proposed for Sale of Surgical Supplies.—Regulation of the traffic in sutures and surgical ligature material is contemplated in a bill introduced in the House of Representatives by Congressman Johnson of Washington. Shipment in interstate or foreign commerce of suture or ligature material for human surgical use that is without sterilization labels or that is not packed and prepared in containers against contamination is forbidden. Every manufacturer must hold a license granted by the Secretary of the Treasury, who is authorized to enforce the proposed act with full powers to enter and inspect any plant manufacturing suture or ligature materials. A board is established, composed of the Surgeon Generals of the government services, to draw up regulations for the control of the manufacture and sterilization of suture and ligature materials. The Secretary of the Treasury may revoke licenses in case of violations, and a penalty of a $1,000 fine with imprisonment of not more than a year is affixed to the measure.

Bequests and Donations.—The following bequests and donations have recently been announced:

Pathological Laboratory, Mount Sinai Hospital, New York City, an additional gift of $150,000, to be known as the Adolph Lewisohn Foundation.

St. Vincent's Hospital and the Roman Catholic Orphan Asylum, New York City, each $100,000, by the will of Daniel J. Carroll.

The Portsmouth Hospital, the Chase Home for Children and the Home for Aged Women, Portsmouth, N. H., each $25,000, by the will of Woodbury Langdon, Portsmouth.

Lynn Hospital, $50,000; Lynn Day Nursery, $5,000, by the will of Mrs. Mary Johnson, Lynn, Mass.

Waldo County Hospital, Belfast, Me., $8,000, by the will of Charles F. Sadlt of Belfast.

Boston Hospital for Incurables, the Perkins Institute for the Blind, and the Floating Hospital, Boston, each $5,000, by the will of Mary L. Locke, of Newton, Mass.

Augusta General Hospital, $5,000, by the will of Joseph H. Briggs, Winthrope Center, Me.

Maine Eye and Ear Infirmary, Portland, Me., $5,000, by the will of Charles E. Whidden of Westbrook.

Home for Nurses of the Methodist Hospital, Princeton, Ind., $5,000, by Thomas L. Carrithers of Gibson County.

Salem Hospital, Salem; Beverly Hospital, Beverly; Florence Crittenden League of Compassion and the Boston Nursery for Blind Babies, each $250; The Malden Hospital, $500, by the will of Charles L. Gould of Topsfield, Mass.

New England Sanatorium and Benevolent Association, $500, by the will of Rosewell B. Lawrence of Medford, Mass.

Residence, valued at $12,000, with all furnishings deeded as a gift to Sunnyside, a home for the aged, at Hastings, Neb., by two brothers named Frahm.

New hospital at Grove City, Pa., $5,000, to purchase a roentgen-ray machine, by the Kimberly Charitable Fund.

LATIN AMERICA

Personal.—The Swedish Medical Association at a meeting in September elected as foreign members the two professors of dermatology at Rio de Janeiro, Dr. F. Terra and Dr. E. Rabello, and also the director of the dermatologic service at the leading hospital, Dr. Werneck Machado.

FOREIGN

Typhus in Poland and Galicia.—The *Münchener medizinische Wochenschrift* states that typhus is increasing in Poland and Galicia. Between April and September, 122,934 cases were recorded.

Far Eastern Medical Congress.—The fourth annual Far Eastern Medical Congress was held, August 6-13, Batavia, under the presidency of Dr. D. Vogel. It was opened by Dr. D. Fock, governor general of the Dutch East Indies, and a congressional excursion was made to the nearby district where the governmental plague fighting service has recently been at work. The Japanese delegates included Dr. S. Hata of the Kitasato Institute for Infectious Diseases, and Dr. M. Magayo of the Tokyo Imperial University.

International Aviation Congress.—The medicophysiologic section of the First International Congress on Aerial Navigation which convened at Paris, November 15 to 26, was in charge of Prof. C. Richet, aided by Prof. A. Broca, Professor Guillain, Prof. J. Camus and Dr. Crouzon, member of the governing board of the Aéro-Club of France, and Dr. A. Pettit, secretary general of the Société de biologie. The secretaries were Dr. Garsaux, chief of the medical service of aerial navigation, and Dr. Béhague, also of this service.

Medical Esperanto Association.—This international association has been revived since the war, and headquarters have been established at Lille in charge of the president, Professor Vanverts, and the vice president, Dr. Briquet, rue de la Bassée 31, Lille, France. On request, a small pamphlet describing Esperanto will be sent to physicians. The honorary presidents are Professors Gariel and Richet of Paris; Dr. Cass of England is secretary. The International Esperanto Review, the organ of the association, is to be revived.

Prize to Jacobæus.—The Jubilee prize of the Swedish Medical Association was awarded in September to Dr. H. C. Jacobæus for his publications on the cauterization of pleural adhesions in pneumothorax treatment of tuberculosis. The prize award stated that this is only one link in a long chain of works on the surgery of the lung with the aid of the thoracoscope. He is now visiting in this country, and delivered the Mütter lecture on surgical pathology at the November 2 meeting of the College of Physicians of Philadelphia, as already mentioned.

Housing Distress in Germany.—Abderhalden publishes in our German exchanges this week an appeal to the profession to aid in a comprehensive effort to relieve the housing distress. He states that in Hamburg Brandt found 5,600 families living in one or two rooms and a tuberculous member of the family in one of each seven or eight homes of the kind. In Berlin, he adds, one third of the populace are living in one room homes, and in Hamburg 16,000 people are without homes. He says that at least 600,000 more dwelling places are needed at once, and urges all organizations of physicians to unite to remedy this evil. He asks for a direct expression of opinion from each medical organization.

Deaths in Other Countries

Dr. **W. H. Erb,** professor emeritus of clinical medicine at Heidelberg, whose name is connected with numerous nervous diseases, atrophy, paralysis, points, signs, etc., aged 81.——Dr. **A. Adamkiewicz,** formerly professor of physiology at Cracow and for a time at Vienna, aged 71. The list of his works is a long one but he is best known by his advocacy of his "Cancroin" which he insisted would cure cancer.——Dr. **F. Lewandowsky,** professor of dermatology at the University

of Basel, aged 43.——Dr. **A. Laastad,** a roentgenologist of Bergen, Norway.——Dr. **G. Drouineau** of La Rochelle, France, honorary inspector general and member of the board of the Assistance Publique, aged 83.——Dr. **Arie Mijnlieff** of Arnhem, at one time president of the Netherlands Medical Association, aged 68.——Dr. **J. Schieck,** long director of the Dresden deaf-mute asylum, aged 81.——Our exchanges also record this week the death of two physicians from automobile accidents, Dr. **E. Turnowsky** of the Austrian army staff and Dr. **Cools** of Ghent.

Government Services

Award of Honor Medals Discontinued

The act of Congress, approved July 9, 1918, authorizing the President to award the Congressional Medal of Honor, the Distinguished Service Cross and the Distinguished Service Medal of meritorious acts performed during the war, provided that these awards must be made within three years from the date of the performance of the act justifying the award. November 11 having marked the third anniversary of the signing of the armistice, no further awards for these army medals can be made. The only exception to the three-year limit in the act was in the case of men in the army at the time of the passing of the act who have been previously recommended for the medal of honor and whose meritorious acts, while not justifying the award of that medal, did justify the award of the Distinguished Service Cross or Distinguished Service Medal.

Instruction of Medical Officers

The funds available will not permit more than five officers of the medical department, National Guard, to attend the regular army medical field service school at Carlisle, Pa., instead of thirty, as was originally intended. Applications to attend the school should reach the Militia Bureau of the War Department by Jan. 15, 1922. The course at Carlisle begins March 13 and lasts until April 24. No one will be detailed for study at the Army Medical School, Washington, D. C.

Bill for Reorganization of Public Health Service

Before the final adjournment of the extra session of Congress, Senator Watson of Indiana introduced a bill in the Senate providing for the reorganization of the commissioned personnel of the U. S. Public Health Service. A similar measure had been previously presented to the House of Representatives by Congressman Dyer. The proposed act provides for the commissioning in the regular service of 550 reserve officers, and a system of promotions based on term of service is established. The term of the Surgeon General is fixed at four years, his appointment to be made by the President with the consent of the Senate from the commissioned officers of the U. S. Public Health Service, thus preventing the selection of an outside physician. The hygienic laboratory is reorganized with seven professors, and a corps of nurses, dietitians and reconstruction aids is inaugurated. There is no change in pay in the commissioned personnel of the service. The bill was referred to the Committee on Finance of the Senate.

Additional Duties for Public Health Service

Additional duties and functions will be assigned to the Public Health Service if Congress approves the request recently made by Secretary of the Treasury A. W. Mellon to provide officers and men of the U. S. Coast and Geodetic Survey with medical and hospital services and supplies. Secretary Mellon and Secretary Hoover have approved the proposal that officers and men in the Coast and Geodetic Survey shall receive the same medical and hospital care, at government expense, as that supplied to officers and men in the Navy. As the coast and geodetic survey is a bureau of the Department of Commerce, there is no existing authority under the law for men in this service to receive the benefits above mentioned. Secretary Mellon has acquiesced in the arrangement to have this work done by the U. S. Public Health Service, which is one of the bureaus under the Treasury Department. Final action will not be taken until the new session of Congress in December.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 7, 1921.

Epidemic of Scarlet Fever and Diphtheria

Not since 1893 has the autumn epidemic outbreak of scarlet fever and diphtheria been so severe in London as this year. An epidemic of the two diseases is responsible for 9,000 patients in the metropolitan fever hospitals, and fresh cases are being admitted at the rate of 200 a day. Fortunately, the outbreak is in a mild form. Among 6,000 cases of scarlet fever in hospital there has been only one death during one week, which seems to indicate a great change in type. Among 2,447 cases of diphtheria there have been twenty-seven deaths. The following explanation has been advanced of the extent of the epidemic. It is noticed at the London fever hospitals that epidemics revolve in a circle of seven years. In 1914 there was a severe outbreak, and the previous similar one occurred in 1907. Consequently, preparations were made for the present one. It has also been suggested that the great drought of the past summer was partly responsible. During the eight weeks ending November 5, the average number of cases under treatment was 5,424, and the average number of deaths 4.5 each week.

The Declining Birth Rate

The National Birth-Rate Commission is again investigating the question whether there has or has not been a decline in fertility due to natural causes. Mr. Carles E. Pell gave evidence. He laid down the law that "the same conditions which cause a high or a low death date cause also a high or a low birth rate, and the conditions which cause a low death rate are good feeding, easy circumstances, healthy surroundings, and a high development of intelligence and nervous energy." He thought that there had been an immense decline in natural fertility. He quoted figures from Paris showing that among 445 couples prominent in the campaign for large families, 170 were childless, and the average number of children for one family was one and a third, while only seventy-five had more than two children. But each couple could more easily have supported twenty children than a working-class family could support one. Unless one accepted the obvious conclusion that this result was due to natural causes, one had to assume that more than a third had taken troublesome precautions from the very marriage to avoid the birth of a single child. That was to assume that they were models of unnatural egoism and gratuitous hypocrisy, though they were among the most enlightened and patriotic members of society. Turning to the facts of biology, it would be found that the contraceptive theory was quite unnecessary. From the very beginning of organic evolution the degree of fertility had been graduated down to suit the death rate. If nature could do this through the unnumbered ages, she should do it now. Exactly similar results to those now appearing in human society were produced under similar circumstances throughout the animal and vegetable kingdom. Throughout human society the birth rate rose and fell with the death rate with remarkable regularity, if the necessary allowance were made for the varying age and sex composition of the populations concerned. This was true whether comparisons were made between different countries, different classes or different periods in the history of the same country. Dr. Halford Ross had shown that when hygienic measures in the Suez Canal zone caused a heavy fall in the death rate, the birth rate fell with it. Fertility bears a direct relation to social status, and social status implies different conditions of life. We are

forced to the conclusion that a natural law is at work by every line of argument, and this spares us the necessity of assuming a state of moral decadence among the ablest and most intelligent classes.

The Anthrax Problem

At the international labor congress in Geneva, Professor Armstrong, Australian employers' delegate, submitted a resolution that the committee considers that the question of the universal and compulsory disinfection of wool and hair infected with anthrax, in its humanitarian aspects, has not yet been sufficiently studied to justify the conclusion of an international convention; that the conference should request the governing body of the international labor office to appoint an advisory committee to which the governments of France, Great Britain and Germany, as representing the users, and Australia, India and South Africa, the producers, should be invited to send representatives, and that this committee should be invited to examine the question in all its bearings and present its report to the conference in 1923; that the chairman of the proposed advisory committee should be appointed by the British government; that the inquiry should at first be mainly by correspondence; that when meetings of the committee become necessary, they may be summoned by the chairman in London, and that cooperation of a representative from the United States be invited. While accepting disinfection as the only effective means at present of protection of workers, the committee regards the eradication of the disease among animals as the ultimate solution, and is of opinion that the advisory committee should be instructed to report on this subject.

Soldiers' Artificial Legs: A Lighter Type

The number of men who have lost limbs during the war amounts to 41,000. A committee appointed by the ministry of pensions has been inquiring for some time into the arrangements for the supply and repair of artificial limbs. It has now issued a report. The evidence shows that complaints have been made concerning the artificial legs supplied for amputations above the knee. The wooden legs supplied were in most cases unnecessarily heavy. The ministry, with the assistance of the makers, has designed standard pattern wooden limbs combining the latest improvements in mechanical efficiency and lightness, which will shortly be available for issue. The committee thinks that the new wooden limb will prove satisfactory for most of the cases, but that the approved light metal limbs should be supplied when recommended by the surgeon.

PARIS

(From Our Regular Correspondent)

Nov. 4, 1921.

Anesthesia in Genito-Urinary Surgery

Among the many questions reviewed at the twenty-first French congress of urology, recently held in Strasbourg, the subject of anesthesia in genito-urinary surgery awakens the most interest. In their communication, Drs. Maurice Chevassu and F. Rathery, associate professors of the medical department of the University of Paris, first considered general anesthetics. They laid particular stress on the advantages presented by ethyl chlorid, given in very small doses, either for a short narcosis or for the quick execution of a stage of an operation difficult to perform without a local anesthetic. Nitrous oxid should be given only by a competent anesthetist. It does not seem to be very toxic even with the admixture of a small quantity of ether. Though it by no means produces complete abdominal rest, it does not seriously impede renal operations, but it should be seldom used in operations on the pelvic ureter or extensive operations on the bladder. Chevassu and Rathery do not advise its use in operations in which the patient must be placed in a lithotomy position, for if the patient rouses slightly it is particularly troublesome for the surgeon. Nitrous oxid is, in principle, especially indicated in patients with low blood pressure and those suffering from shock. It is contraindicated in patients with high blood pressure and probably dangerous in those with a maximal pressure above 20 (Pachon apparatus). It would be contraindicated in all those subject to pulmonary congestion—especially the aged and the tuberculous—unless it is given by means of a long tube, which reduces considerably the intense cold of its vapors.

Ether does not agree with subjects whose lungs are the least bit weak. Having, like nitrous oxid, a tendency to raise the blood pressure, it is, like the latter, indicated in frail people and patients with cachexia or low blood pressure. But its toxicity for the kidneys and liver being much greater than that of nitrous oxid, the latter is preferable in most cases in which ether would otherwise be indicated.

As regards chloroform, which is no doubt the most toxic of the general anesthetics in common use, it still retains its reputation for being easily handled and for offering ideal facilities to the surgeon. The low blood pressure that it tends to produce constitutes a special indication for subjects with high blood pressure. Its mild action on the lungs renders it the preferred general anesthetic for those with pulmonary difficulties. But for patients whose kidneys and liver demand cautious treatment it must be considered the worst of all.

From these facts it appears that there remains in genito-urinary surgery an important place to be filled by local anesthetics. With ordinary infiltration anesthesia induced by 0.5 per cent. solutions of procain, a great many present-day operations in genito-urinary surgery may be performed; for example, incision of perinephritic abscess, renal biopsy, renal decapsulation, nephrotomy and nephrostomy, operations on the bladder, cystotomy, operations on the prostate (including prostatectomy), and urethral and periurethral operations. Instead of injecting the anesthetic directly into the operative zone, the operative area can be circumscribed by an anesthetized circle, so as to block the nerves in the whole region enclosed by this circle. This method of regional anesthesia should not, however, be allowed to supplant infiltration anesthesia of the tissues to be incised, which is also at times very practical. Both methods have their indications. If, in operations performed on a relatively large area, the operative region is naturally circumscribed, there is no advantage derived from the use of regional anesthesia for linear incisions in such circumscribed areas, and this is usually the condition in genito-urinary operations.

It is also possible to secure anesthesia of the kidney by injecting a local anesthetic into the solar plexus and its afferent and efferent branches. The weak point in splanchnic anesthesia is found in its inconstancy, due probably to the fact that the technic has not been thoroughly established as yet. The essayists mentioned also spinal anesthesia or rachianesthesia, which has made unquestionable progress during the last few years. However, in spite of this progress, spinal anesthesia seems to present many uncertainties for the genito-urinary surgeon; these uncertainties are much greater in renal operations than in pelvic and especially perineal operations. In this connection, we must not lose sight of the absorptive power of the mucous membranes of the urethra and bladder; while the pelvis absorbs more quickly still. In view of the toxicity of cocain, Chevassu and Rathery hold that it is never advisable to inject it into the bladder or the urethra. Solutions of procain, on account of their weak toxicity, seem especially indicated here.

Dr. Hogge of Liége reported some sixty observations of general narcosis with nitrous oxid, during which no rousing

or other accidents were noted. Examination for azotemia, before and after the intervention, shows insignificant differences. Its harmlessness for the kidneys and liver has been proved by examination of the urine not only of genito-urinary patients but also of those whose cases come under general surgery. One of the advantages of narcosis with nitrous oxid is that patients may be allowed to drink soon after the operation. Hogge regards general anesthesia with nitrous oxid as an ideal procedure in genito-urinary operations, especially in operations on the prostate, but it should be administered by a conscientious and expert anesthetist.

Dr. Gayet of Lyons endorses spinal anesthesia by means of procain, which he considers the preferred procedure in prostatectomy and cystostomy. Few accidents have been noted. Caffein suffices to suppress the tendency to lypothymia. Meningeal accidents are to be feared only in young, neuropathic and injured subjects, and it is better in such cases to refrain from this form of anesthesia. Dr. de Smeth of Brussels held that, in operations on the kidney, general anesthetics are the easiest to use, in spite of their toxicity, which, moreover, can be attenuated by Billroth's mixture (chloroform, alcohol and ether). When the technic of splanchnic anesthesia shall have become more practical and more certain in its results, a great step forward will have been realized. Local anesthesia by infiltration is the preferred method in cystotomy, hydrocele, varicocele and phimosis. Spinal anesthesia exerts no harmful action on the kidney; it can be applied to prostatectomy and to all operations on the perineum. De Smeth's statistics covering 1,200 cases show a mortality of 0.25 per cent. with this method.

Dr. J. Abadie of Oran reported the results of his experiments to determine the prophylactic action of caffein given subcutaneously in depressing disturbances due to spinal cocainization. He recommends the prophylactic injection of caffein, as he has often noted its effectiveness. It is better to give the injections two or three hours before the operation. The elevated position is to be preferred. Dr. Le Clerc Dandoy of Brussels discussed his own personal method of applying general anesthesia, which he has employed with success in 150 cases during the past two years. He proceeds thus: An hour and a quarter before the operation is to be performed, the patient is given a hypodermic injection of an ampule containing ethylmorphin hydrochlorid (dionin), heroin, morphin and scopolamin (hyoscin) hydrobromid, the proportions depending on the sex, the muscular condition, and the habits of the subject with respect to alcohol. After an hour and a quarter, the anesthesia is completed with a mixture (administered by the drop method) composed of 20 gm. of chloroform, 20 gm. of ether and 10 gm. of ethyl chlorid. He claims these advantages for his method: no period of excitation or semiawakening; the patient retains a rosy color, and has no tendency to syncope. What is most remarkable is the small quantity needed of the mixture. For an anesthesia lasting one hour, the quantity of chloroform used does not exceed 6 or 8 gm. The patient comes out from under it very quickly and vomiting rarely occurs.

Dr. Pasteau of Paris, taking the view that an anesthetic is always dangerous, endeavors to administer only a minimum of the least harmful anesthetic. General anesthesia being more harmful than local anesthesia, we should resort to the latter as much as possible, and particularly to infiltration anesthesia, which permits, during the operation, the elimination of most of the liquid that has been injected (procain). Thus, most urethral incisions, perineal incisions of prostatic abscesses, cystostomy, and lumbar incisions can be made without general anesthesia. General anesthesia is, however, necessary in some cases. In many cases we must know when to use secondary or complementary general anesthesia to finish an operation begun with local anesthesia. Spinal anesthesia may be useful, but it is not advisable in males when an instrument has to be introduced into a urethra that has become too flabby. For bladder operations and especially for lithotrity, chloroform, to which Pasteau always adds 25 per cent. of ether, remains most practical, since of all anesthetics, it is the easiest to handle.

Professor Jeanbrau of Montpellier stated that spinal anesthesia constitutes a method with many advantages in urology, being equally good for difficult explorations as well as for all operations on the superior and inferior urinary organs. The advantages are these: The capacity of the bladder is increased, while the sensitiveness of the bladder is diminished to a greater extent than in anesthesia by inhalation or in local anesthesia. During the course of the operation abdominal rest is complete, and relaxation of the walls is perfect. The results are excellent, and patients who had previously been anesthetized with chloroform or ether were unanimous in their preference for spinal anesthesia, which, moreover, does not affect the liver as do ether and chloroform.

At the close of the session, Drs. Chevassu and Rathery remarked that spinal anesthesia seems to have warm advocates among the urologists. There are very few, however, who have not been witnesses of grave, even fatal, accidents. For his part, Rathery stated that he had observed in certain subjects to whom spinal anesthesia had been applied paraplegias that seemed to be explainable on no other ground. He thinks it would, therefore, be of interest to observe, for several months after the operation, subjects anesthetized by this method, in order that definite knowledge of possible harmful after-effects might be secured. Chevassu held that, aside from the late accidents, the number of immediate or almost immediate deaths constituted an exceedingly strong incriminating charge against the method. The administration of a stimulant (strychnin, caffein) with a view to combat the depressive phenomena commonly associated with spinal anesthesia seems to be regarded, more and more, as indispensable.

MADRID

(From Our Regular Correspondent)

Oct. 20, 1921.

The Red Cross

The Spanish Red Cross received so many gifts for the Moroccan war that it was hardly able to handle them. Spain showed in this respect a generosity far above what could be expected, but a lack of organization was also unfortunately apparent. Much money was wasted, and the country knows too well that if the funds had been well administered the results would have been much better.

The Army Medical Corps in the Melilla Campaign

The occupation of the Rif region in northern Morocco has been for many years a true nightmare for Spain. Every summer as soon as the Moroccans have gathered their crops, an outbreak is expected which may materialize or not, but which is always planned and preached by the marabouts or Moorish holy men. Last summer, an avalanche of fanatical Moors fell on the eastern part of the Spanish zone in Morocco, slaughtering every Christian they could seize. All prisoners were killed except the few who fell into the hands of a rebel chief, educated in Spain. The Rif troops razed several towns, including Nador and Zeluan, massacring all the inhabitants. A cry for revenge echoed this event in Spain. The Spanish army medical corps has gained new glory in this campaign. It is a fact that it was not provided with the necessary resources, but the efforts of the medical officers supplied the deficiencies in material. The number of deaths among medical officers is so large that the government has not

published complete figures, and the lists are being given out partially. All chiefs of columns, all those who exercised military authority in Morocco, have laid stress on the unfailing self-sacrifice of every member of the army medical corps. In many cases, medical officers who had received several bullet wounds kept on rendering their services at the front until they finally died. The casualties in this branch of the service were much higher than those of any other branch. This is partly due to the fighting peculiarities of the Rif Moors, who, as is well known, do not respect Red Cross signs, medical formations or trains of wounded, their tactics consisting in attacking in masses at the very moment when fighting is stopped, when the soldier is exhausted after a day's fighting under the burning sun, and the resultant confusion affects transportation of the wounded. Besides their military duties, our colleagues in the African army are charged with the duty of sanitation in the field. The Moors have not buried the bodies of those killed when they made their first advance, and the Spanish troops as they move forward find the corpses of those who fell three months before, still unburied.

BERLIN

(From Our Regular Correspondent)

Nov. 3, 1921.

Influence of the War on the Mortality of the Civilian Population

Extensive statistical studies on the period from 1910 to 1914 show a mortality of 3.72 per thousand for arteriosclerosis, myocardial disease and apoplexy (exclusive of heart defects), whereas during the war period from 1915 to 1919 the record was only 3.01 per thousand. The mortality for diabetes from 1910 to 1914 was 0.44 per thousand; for 1915-1919 it was 0.31. For tuberculosis the figures are reversed, since for the years 1910 to 1914 there was a mortality of 0.75 per thousand, whereas in the period from 1915 to 1919 it rose to 0.92, reaching the peak in 1917, the so-called turnip year. It is apparent, therefore, that the manifestations of undernutrition are reflected in tuberculosis, whereas the scant diet, poor in protein, exerted a favorable effect on patients with arteriosclerosis. The improvement in food conditions since 1920 has resulted in reducing the mortality from tuberculosis from 144 to 107.

Operative Treatment of Malignant Uterine Tumors

Professor Zweifel, the Leipzig gynecologist, discusses the results of operative treatment of malignant uterine tumors as compared with radiotherapy, taking an interval of five years free from recurrence as the lowest limit for a lasting cure. On this basis the record of deaths and recoveries at Zweifel's clinic has been: Glöckner series, 260 cases primary mortality, 8.46 per cent.; lasting cure, 35.6 per cent. Aulhorn series, 420 cases; primary mortality, 13.1 per cent.; lasting cure, 54.4 per cent. Number of cases in which the body of the uterus was involved, 32; primary mortality, 6.2 per cent.; lasting cure, 77.7 cases. Schweitzer series, 322 cases; primary mortality, 4.96 per cent.; lasting cure, 54.5. With extraperitonealization, Schweitzer-Wertheim series, 80 cases; primary mortality, 12.5 per cent., lasting cure, 42.9 per cent. Number of these cases in which the body of the uterus was involved, 28; primary mortality, 3.5; lasting cure, 88.8 per cent. Number of abdominal carcinoma operations on account of hemorrhage following cohabitation, 24; primary mortality, 4 per cent.; lasting cure, 87.3 per cent. Radiotherapy results, on the average, in 40 per cent. of lasting cures based on a relatively short period of observation. The early diagnosis of carcinoma is of exceedingly great importance. Hemorrhages following cohabitation constitute a symptom for early diagnosis, whereas postclimacteric hemorrhages are due in only 75 per cent. of the cases to malignant new growths, the remaining 25 per cent. being ascribable to harmless affections, usually polyps of the fundus. An itching sensation is likewise in many cases an early symptom of carcinoma of the uterus. In every case that appears at all suspicious a diagnostic excision or abrasion of tissue is indicated. Carcinomas operated on should receive postoperative irradiation, while exclusive irradiation is reserved for inoperable cases.

Vital Statistics for the First Six Months of 1921

The record of marriages for the first quarter of 1921 does not come up to the record for the first quarter of 1920. Whereas, last year, during the first quarter, there were 23.66 marriages per thousand inhabitants, for the corresponding months this year there were only 20.78. An explanation of this is likely to be found in the fact that, on the one hand, the marriages that were postponed, during the war period, have now been concluded, and, on the other, that the economic conditions have become more and more unfavorable, more especially as regards the increasing lack of housing facilities. However, even the record of 20.78 marriages per thousand population is still considerably higher than the average for 1913, which was only 15.54 per quarter, and than the first quarter of 1913, which was only 12.39 per thousand. It should be noted that the statistics refer to the territory of Prussia in its varying extent. However, the changes in territory exert such a slight influence on the relative proportion, which is all that is given in the report, that comparisons are still justified. Also the record of births, 27.53 per thouand inhabitants, which is below that of the first quarter of 1920 (29.07), appears low when we consider that it should reflect the effect of the higher record of marriages for the second quarter of 1920. It was, however, higher than that of the three preceding quarters of 1920, but was below the average figure for 1913 (29.03) and the record of the first quarter of 1913 (29.58). The mortality rate, 14.56 per thousand inhabitants, was comparatively low. Accordingly, there was for the quarter a greater excess of births over deaths than in the years immediately preceding. To be sure, the excess (12.02) is not quite equal to that of 1913 (13.28).

Marriages

EDWARD A. COATES, Major, M. C., U. S. Army, Fort Andrews, Mass., to Miss Maude M. Nudd of West Newton, Mass., November 17.

MAXWELL GORDON KEELER, Capt., M. C., U. S. Army, Philadelphia, to Miss Julia Baird Schoonmaker, at Stamford, Conn., November 8.

WILLIAM WALTON RIXEY, Richmond, Va., to Miss Helen Bradish, Charlottesville, Va., at New York City, in October.

HOWARD RUSSELL MASTERS, Richmond, Va., to Miss Bealmere Dare Linthicum of Fredericksburg, October 26.

OLIVER ALLISON RYDER, Alexandria, Va., to Miss Anne Elizabeth Potts of Portsmouth, Va., October 8.

FRANK RAYMOND PETERSON, Iowa City, to Miss Coral A. Johnson of Laurens, Iowa, September 7.

FLOYD ELLSWORTH BEST, Wells, Minn., to Miss Lonetta N. Hinderks of Freeport, Ill., in October.

MADISON REDD DREWRY to Miss Mary Anderson Starling, both of Cascade, Va., October 12.

HAROLD RICHARD KURTH to Miss Bessie Dodge Neily, both of Lawrence, Mass., October 10.

IRA CEPHAS RIGGIN to Miss Ruth Elizabeth Bradshaw, both of Windsor, Va., October 5.

MERLE ROWLAND FRENCH, Iowa City, to Miss Irene Batcher, September 8.

Deaths

John Joseph Flynn, Pittsfield, Mass.; Jefferson Medical College, Philadelphia, 1884; member of the Massachusetts Medical Society; served nearly ten years as associate medical examiner in the Berkshire district; former member of the board of health; for twenty years on the staff of the House of Mercy Hospital, Pittsfield, where he died, November 13, following an operation for appendicitis, aged 60.

Frank Paul ✱ Baltimore; College of Physicians and Surgeons, Baltimore, 1912; resident pathologist, Mercy Hospital, 1912-1913; member of staff of the Yates Hospital, Milwaukee, 1913-1920; assistant in the pathologic department, Johns Hopkins Hospital, Baltimore; member of the Medical and Chirurgical Faculty of Maryland; died, November 11, at the St. Agnes Hospital, aged 34.

Frederick Henry Rapoport, New Haven, Conn.; Yale University, School of Medicine, New Haven, 1918; served during the World War as captain, M. C., U. S. Navy, at the Chelsea Naval Hospital, Chelsea, Mass.; died suddenly, November 1, from pneumonia, aged 28.

Allston David Horah, Salisbury, N. C.; University of Virginia, Charlottesville, 1887; College of Physicians and Surgeons (Columbia University), 1890; died, October 19, in the State Hospital for the Insane, Morganton, S. C., from general paresis, aged 57.

Jacob G. Chambers, Sadorus, Ill.; Geneva Medical College, Geneva, N. Y., 1864; practitioner for more than half a century; surgeon in the Civil War; member of the Champaign county board of supervisors; died, November 3, from carcinoma, aged 78.

Thomas Millman, Toronto, Ont.; Trinity Medical College, Toronto, 1873; M.R.C.S., England, 1876; L.R.C.P., Edinburgh, 1876; supreme physician, Independent Order of Foresters, Canada; died, November 15, from senility, aged 72.

Edward Mayo Ashley, Creston, Wash.; University of Minnesota, Minneapolis, 1906; member of the Washington State Medical Association; died, November 11, at the Providence Hospital, Oakland, Calif., aged 42.

Jacob Nehrbas, Brooklyn; College of Physicians and Surgeons, New York City, 1880; member of the Medical Society of the State of New York; died, November 14, from heart disease, aged 66.

William J. Fields, New York City; College of Physicians and Surgeons (Columbia University), New York City, 1880; died, November 3, from valvular heart disease, at Manasquan, N. J., aged 65.

John J. Newpher, Mount Joy, Pa.; Bellevue Hospital Medical College, New York, 1881; former visiting physician to the Misericordia Hospital, New York; died, November 10, aged 65.

Moses Markus Thaler, Brooklyn; Eclectic Medical College of the City of New York, 1905, and the University of Vienna, Austria; died, November 13, from ulcer of the stomach, aged 52.

William P. Penfield, Conrad, Iowa; Rush Medical College, Chicago, 1865; practitioner for over half a century; surgeon in the Civil War; died, September 12, from senility, aged 93.

Clara Anna Moore, Lee, Maine; Eclectic Medical College of Maine, Lewiston, 1883; died, October 31, in a hospital at Portland, Maine, from cerebral hemorrhage, aged 72.

Robert Watson McCafferty ✱ Philadelphia; University of Pennsylvania, Philadelphia, 1901; died suddenly, November 14, from heart disease, in Montpelier, Pa., aged 43.

Albert E. Herzog, Ottawa, Ill.; College of Physicians and Surgeons, Chicago, 1899; died, November 11, at the Watertown State Hospital, East Moline, Ill., aged 45.

George Washington Tooley ✱ Huntington, W. Va.; Wisconsin Eclectic Medical School, Milwaukee, 1896; died, November 4, at a local hospital, aged 62.

William S. Hitch, Pocomoke City, Md.; Jefferson Medical College, Philadelphia, 1861; practitioner for more than half a century; died, November 10, aged 82.

Lillie Anastasia Aberle Bartols, Dorchester, Mass.; Women's Medical College of Baltimore, 1901; died, November 8, after a long illness, aged 40.

✱ Indicates "Fellow" of the American Medical Association.

William Beebe, Columbus, Kan.; Medical College of Ohio, 1877; died, October 4, from a bullet wound in the head, presumably self-inflicted, aged 69.

Henry F. Beckham, Roosevelt, Okla.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1892; died, November 9, from jaundice, aged 53.

Thomas O'Brien, St. Nazianz, Wis.; Rush Medical College, Chicago, 1890; died, November 13, at the home of his brother, in Eden, Wis., aged 52.

George Frederick Colter, Marinette, Wis.; University of Pennsylvania, Philadelphia, 1888; died, November 12, after a long illness, aged 56.

John A. Moore, Folkston, Ga.; University of the South (Sewanee Medical College), Sewanee, Tenn., 1899; died, November 10, aged 44.

Andnes M. Tallmadge, Arkport, N. Y.; Bennett Medical College, Chicago, 1894; veteran of the Civil War; died, November 7, aged 74.

Arthur Stevens Kimball ✱ Battle Creek, Mich.; University of Michigan, Ann Arbor, 1903; died, November 6, from appendicitis, aged 42.

Benjamin Harvey, [illegible]nderson, Ind.; Medical College of Indiana, Indianap[illegible]885; died, November 11, at Los Angeles, aged 63.

James R. Huffaker, Brookfield, Mo.; Homeopathic Medical College of Missouri, St. Louis, 1878; died suddenly, November 15, aged 74.

James G. Sterrs, Atlanta, Ga.; Leonard Medical School, Raleigh, N. C., 1900; died, October 12, from cerebral hemorrhage, aged 40.

Charles Vernon Fox, Wessington Springs, S. D.; American Medical College, St. Louis, 1893; died in October at Mellette, S. D., aged 55.

William Henry Roberts, San Francisco; Hahnemann Medical College of the Pacific, San Francisco, 1884; died, November 8, aged 54.

John Henry Rompf, Louisville, Ky.; Kentucky School of Medicine, Louisville, 1892; also a druggist; died, November 10, aged 51.

Jesse Davis Payne, Casper, Wyo.; College of Physicians and Surgeons, Keokuk, Iowa, 1887; died, November 1, aged 55.

Ulysses Grant M. McHugh, Pittsburgh; Baltimore Medical College, 1898; died, November 2, from pleuropneumonia, aged 52.

A. R. Jones, Lavonia, Ga.; Southern Medical College, Atlanta, 1884; died, October 11, from chronic nephritis, aged 58.

William F. Ruff, Philadelphia; University of Pennsylvania, Philadelphia, 1893; died, November 17, after a long illness, aged 50.

Alice A. Benton, Pullman, Wash.; American Electic Medical College, Cincinnati, 1880; died in October from senility, aged 80.

A. F. Upton, Coleman, Texas (license, Texas, 1896); accidentally shot while hunting near Stacy, November 6, aged 61.

LeGrand Allen Walker ✱ Rochester, N. Y.; Columbia University, New York City, 1891; died, November 8, aged 56.

Alexander Donald, St. Paul; Hahnemann Medical College and Hospital, Chicago, 1880; died, November 8, aged 75.

Milton Nathan Armstrong, Atlanta, Ga.; University of the City of New York, 1875; died, November 6, aged 73.

Milton F. Acker, Tylersport, Pa. (years of practice); died suddenly from heart disease in October, aged 73.

John Joseph Keating, San Francisco; Barnes Medical College, St. Louis, 1901; died, October 30, aged 54.

Lee Douglas Meader, Cincinnati; Pulte Medical College, Cincinnati, 1891; died, November 16, aged 53.

Jeff B. Haralson, Fort Payne, Ala.; Memphis Hospital Medical College, 1888; died, October 26, aged 54.

William Stevens, Cairo, N. Y.; Albany Medical College, Albany, N. Y., 1875; died, November 7.

Flavel B. Sloan, Cowan, Tenn.; University of Louisville, Ky., 1871; died, October 28, aged 77.

Jacob Feldman, Newark, N. J. (license, New Jersey, 1889); died suddenly, October 29, aged 74.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

THOMAS WEBSTER EDGAR

The Journal Receives a Letter Denouncing "Medical Clerks" and "Biased Sceptres"

THE JOURNAL recently published in this department some inquiries regarding Thomas Webster Edgar, M.D., of New York City, relative to some alleged serums that Dr. Edgar had developed for diabetes and sex stimulation, respectively, and relative also to the newspaper publicity given Dr. Edgar in connection with the alleged transplantation of glands from "ring-tailed monkeys."

We are in receipt of a letter signed "Thomas Webster Edgar, M.D.," and reading as follows. It is given *verbatim et literatim:*

"American Medical Association, Chicago, Illinois.

"*Gentlemen:*—I have read with great interest your editorial regarding the publicity given my work in metabolism, and gland implantation.

"Your pseudo, expose, and distinctly libelous insinuations are unjust, and they lead me to believe that you are going to be called to account at a very early date.

"My profession is the practice of medicine, and the policy of my practice is not controlled by the editorial department of the journal. I am progressive, and a firm believer that legitiment medicine and surgery can not be practiced if the physician be governed by a set of medical clerks, who disdainfully boast that they control, and govern the healing art through out the breadth of the land, with a sceptre that is biased and steeped in the unadulterated commercialism of a certain medical clique.

"Aside from the fact that I am an associate editor on a medical publication, it is disgraceful, as well as unjust that you have written such an editorial with out first investigating the therapeutic value of my serum, and implantation operation.

"The psychology of your editorial, only reflects on your editorial department, and will tend to belittle some of the greatest surgeons in the country.

"It may be to your advantage to know, that this very afternoon, I was on the program with the following men.

"Dr. Lewis Gregory Cole—New York
"Dr. Charles H. Mayo—Rochester, Minn.
"Dr. John B. Deaver—Philadelphia
"Dr. Charles Peck—New York.

"My paper was entitled—Senility, its etiology and treatment by gland implantation. I am sure the above mentioned gentlemen are thoroughly ashamed of your actions in the matter, as well as thoroughly disgusted with the baby like attitude you have displayed. You have no sense of fair play, and if it is with in my power to undue the wrong which you have wrought me, I shall endeavor to vindicate myself in the eyes of the clear thinking members of the profession.

"I sincerely trust you will publish this communication, in order that my bretheren shall understand and appreciate that your thrust has not gone unnoticed.

"It is my hope that the various medical societies through out the country, will call upon me to read a paper on my work, so that I may be able to offer substantial evidence to the fact that you have done me an injustice.

"Very truly yours,
TWE/AEL [Signed] "THOMAS WEBSTER EDGAR, M.D."

Dr. Edgar's statement that he had been on the program with Drs. Cole, Mayo, Deaver and Peck was sufficiently startling to prompt further investigation. It was found that the program in question was that of the annual meeting of the New York and New England Association of Railway Surgeons. It was further found that Edgar's name did appear on some of the printed programs but not on others. It was rather naturally assumed that the name had been put on the program before the officers of this organization had seen the crude publicity to which THE JOURNAL recently called attention. It was found, however, that after several hundred programs had been printed about 150 more were needed and "in the meantime, Dr. Edgar had come into the limelight" in his ring-tailed monkey gland transplantation rôle and "was invited to read a paper on the subject." While he accepted this invitation the secretary of the organization tells us that Edgar did not read his paper but, when the paper was called, declined, saying it was time for him to be in his office!

As for the rest of Dr. Edgar's communication THE JOURNAL appreciates that courtesy is due "an associate editor on a medical publication"—referring doubtless to the *Western Medical Times.* Dr. Edgar's pronouncement that "legitimate medicine and surgery can not be practiced if the physician be governed by a set of medical clerks" seems reasonable—if cryptic. But it is when he charges that these "clerks" govern the healing art "with a sceptre that is biased and steeped in the unadulterated commercialism of a certain medical clique," that he really shines. Whatever opinion one may hold of Dr. Edgar's ability to compound serums, surely no one can question his skill as a mixer of metaphors. His reference to "sceptres" deserves to be embalmed in every textbook on rhetoric with the classic of the Hibernian statesman who passionately declared: "I smell a rat! I see it floating in the air! But, mark you, Sir, I shall nip it in the bud!"

Correspondence

GROUP PRACTICE; DIAGNOSTIC AND PAY CLINICS

To the Editor:—Recent notes in THE JOURNAL of November 19 and 26 on pay clinics call attention to an important subject worthy of full and free discussion. The need for cheap but good medical service has always existed, but is intensified by reason of the advancing cost of living in proportion to income among large numbers of people, and the increased complexity of medical work. Costly apparatus and time-consuming instrumental methods must be available, as well as a number of expert specialists, in order to do justice to the patient. Such work can be and even now is furnished in a few cities by so-called groups or teams, and the number of these teams is increasing rapidly. I believe that most of them adjust their charges to the income. I know some that even make many roentgenograms for patients who pay no fees at all.

There are also many young and well-trained physicians who are able to give all the service necessary in most cases, and who would willingly give it, as Peppers and Janeways did in earlier and less expensive times. One trouble is that the patient does not know how to get in touch with such men. There seems to be no reason why an individual should not have a "clinic" as well as a group, as was done, in fact, in prewar Germany, and call upon as many other specialists, who would be working on the same basis, as the case requires. In towns where there are medical schools for undergraduates or graduates, there need be no question of charity.

Charity always and sometimes pauperization, it must not be forgotten, is inevitable if the patient gets more than he pays for; but in a teaching clinic the patient pays his way in part or in full by giving his time and clinical phenomena. But the needs of medical schools introduce a new factor. Besides the need of service for the patient, there is need of money for the institution, and this opens the way for various sophistries. In some cities, at least, not only single men and women, but even men with families have no such connection. Under these circumstances, the method of referring the patient by the clinic deserves consideration free from prejudice and cant.

The Cornell plan (Correspondence, THE JOURNAL, November 26, p. 1755) does not seem to be free from the latter. A serious contradiction seems involved in the statement (Current Comment, p. 1740): "To prevent the *appearance of competition* [italics mine], the fee charged by the clinic should

be no less than that charged for a *like service* by the family physician." The supposition has been that the family physician cannot give "like service." If he can, why should the patient go to the clinic? If he prefers to go to some one else, why should not the latter charge for his reputation, or to prevent congestion, or any other reason accepted in trade? The "basic principles" of the Board of Trustees (Association News, p. 1741) can be criticized as to 1 and 2 because provision is not made for patients who have no physician. As to 3, if the general practitioner can furnish the same service, a lower charge by the clinic would certainly seem unfair as well as unwise, according to some rules; but there have always been some physicians whose charges were below those customary in the given locality. The Cornell plan, as set forth by Dean Niles, does not claim the altruistic basis suggested by your editorial comment (p. 1740). The clinic has failed not only in cost of running, but also in service given and as a provider of clinical material. It remains to be seen whether any or all of these things can be overcome by providing service for those able to pay the running expenses and the staff. The fact that the attendance is limited seems to admit an imperfection at the beginning. The reasons given (p. 1755) for establishing the clinic can easily be criticized: 1. Large and rich material can be found among patients unable to pay from one to ten dollars. 2. "The major group" would be proper material for a more thorough survey by experts in economics; 3, 4 and 5 can be met with organizations already existing. As to 6, will the "young graduates" "receive sufficient compensation" and be enabled to pursue "clinical and laboratory studies"? These questions cannot be solved by argument. Like the plan for treating well-to-do people at the Hospital of the University of Michigan, and as urged at the University of Virginia, it seems a case of "needs must."

Questions of ethics raised by your correspondent of November 19 must be settled practically. The whole matter of competition has entered a new phase. Will such competition interfere with the prospects of the men and women for whom medical schools are conducted? Will it be "fairer" than former competition, as claimed by Dean Cabot? These are questions to be settled by the rising generation. Let us therefore have all the facts in all such experiments as quickly as possible; and until we have more light, let us hope our passion for imitation, euphemistically called standardization, will not prevent older methods from continuing.

George Dock, M.D., St. Louis.

To the Editor:—I have read with interest the report of the Board of Trustees on pay clinics, as well as the discussion which the establishment of these clinics has elicited.

It is evident that the trend of development in medicine is toward some plan of work which will offer to the man of small means the benefits of those more elaborate and costly methods of diagnosis which are now beyond his reach. This, as I understand it, is the function of the pay clinic.

Much could be written on the possible abuse of such a plan by the well-to-do, and of the effects—good or bad—of these clinics on the morale of the medical profession. But this is not the question.

The progress of today's civilization is unmistakably toward the establishment of some such provision for its relatively less fortunate members, and we could not successfully stand in the way if we would. Why not recognize this and resolve to influence and direct this development as best we can? If we take a sympathetic interest and endeavor intelligently to guide rather than oppose the current of events, we need have no fear for the fate of the medical profession.

James S. McLester, M.D., Birmingham, Ala.

"MELLON ISSUES BEER REGULATIONS"

To the Editor:—In The Journal, Nov. 12, 1921, Dr. Herz seems to argue that the unprogressiveness of the Turk is to be charged to sobriety. Alcohol, though prohibited by the Koran, is nevertheless indulged in by those superlegals of Islam, who, like Omar Khayyam, conceive that "Mustapha's rules were plainly meant, not for the wise, but for fools to obey." Turkish annals record three Sultanic drunkards, Soliman I, Selim II and Amurath IV. The late Sultan Mohammed V was addicted to the abuse of alcoholics, and owed his safety during the reign of his brother, Abdul Hamid, to the fact that the latter regarded him as a harmless drunkard, and saw to it that he should be copiously supplied with his favorite wines. The "Arabian Nights Entertainments," known well to us all, recounts in many of its tales incidents of wine drinking—not confined to the so-called "upper classes." The Mohammedan kings of Persia, also styled the Sophis, had a generous quota of inebriates. Where such an example is shown in high places it is only natural that it should be copied, not only among courtiers, but also among the people at large, and it is doubtful whether the Turk, or even, more generally speaking, the Islamic reputation for sobriety is fully deserved. Travelers have mentioned to me social gatherings in Cairo and Constantinople, in which they were participants or spectators, where alcoholics circulated as freely among the native "swells" as ever in Paris or New York among Dr. Herz's progressives.

The decadence of the Turk is due to the same economic causes that have led to the downfall of all governments since history has been recorded. That Syrians, to name only one of many causes, cut down trees, to avoid the tax imposed thereon, which the yield of such trees meets with difficulty, gives a good idea how the ruling class of the Ottoman Empire has strangled the progress of the ruled masses. As one of that régime frankly stated to a traveling journalist of this city: "We, of the ruling class, numbering about two hundred thousand, levy taxes as we will for our support and preservation. We build no roads and rarely make any improvements." Such a selfishly unprincipled officialdom spells the doom of the welfare of the realm that they should cherish, regardless of the sobriety or nonsobriety of classes or masses.

H. P. Ashe, M.D., Pittsburgh.

ANESTHESIA IN NOSE AND THROAT WORK

To the Editor:—Permit me to reply to a communication by Lester Richard Cahn and Joseph Levy, New York (The Journal, Nov. 26, 1921, p. 1753), who feel it their duty to say something in defense of the use of procain. They claim an experience of many many thousands of injections with only the slightest toxic symptoms, and state that they are at a loss to account for the deaths from procain that are listed in the report made by our committee. Reading their statement, one would be led to believe that fatalities do not occur after procain is injected, and there is no doubt that many, having used that drug freely without untoward symptoms, fully agree with them. The establishment of our committee to investigate this subject was occasioned by this feeling of security, together with the absence of reports as to fatalities, as entirely opposed to the findings on animal experimentation. This led to the attempt on the part of the Committee on Therapeutic Research of the American Medical Association, to ascertain the true facts. Without going into detail, the Section on Laryngology and Otology appointed its committee, which has made two reports. In the 1920 report, printed in full in the Transactions of the Section on Laryngology and Otology for 1920, and also in the *Laryngoscope*, July, 1920, reference is made to the work

of Sollmann and that of Hatcher and Eggleston as showing the relative toxicity based on animal experimentation, of the various synthetic preparations, and both of our reports state that there is a remarkable similarity between the symptoms occurring in fatal cases to those arising in animal experimentation. We have shown that many more deaths occur than are recorded in the medical journals, and that we have reason to believe that still other deaths may be found to have occurred following the use of local anesthetics in other fields of medicine, and hence our request that the investigation be made general.

Our recommendations have received the unanimous endorsement of the Committee on Therapeutic Research of the Council on Pharmacy and Chemistry of the American Medical Association, and on the approval of the Board of Trustees a commission will be formed which will not only ascertain what deaths have occurred in other fields of medicine, but also attempt to solve all questions that may arise. One of the important questions will be as to the greater sensitiveness of one part of the body to another. Our committee was formed to ascertain certain facts. This we have done. We realized that there was much more to do, but felt that any recommendations toward the prevention of fatalities, particularly the avoidable deaths, should have the authority of the entire American Medical Association and not that of a committee of one of the sections. Any explanation of the causes of deaths mentioned by us would therefore at the present moment be futile. None of the conjectures of Drs. Cahn and Levy hold.

Our findings were not only our own, but were also those of the manufacturers of synthetic products, who have cooperated most willingly and have endorsed our statements. We are in no sense antagonistic to local anesthetics. We believe, however, that some of the fatalities are preventable, and that a commission composed of members of the Association in the various special fields who use these drugs will result in a much better understanding of this most important subject. Our report has already accomplished something. One of our recommendations has been adopted. An enterprising manufacturer has prepared a sterile solution of procain in ampules, thus obviating any possibility of substitution.

EMIL MAYER, M.D., New York.
Chairman, Committee on Advantages and Disadvantages of Local Anesthetics in Nose and Throat Work.

"THE PIRQUET SYSTEM OF NUTRITION AND ITS APPLICABILITY TO AMERICAN CONDITIONS"

To the Editor:—A paper by Dr. W. E. Carter of San Francisco appeared in THE JOURNAL, Nov. 12, 1921, describing the Pirquet system of nutrition and recommending it to the American public. There are now many Americans who have visited Pirquet's clinic and have returned to this country advocating his methods. It therefore seems to me an appropriate time to place before your readers certain reasons why I believe physicians should at least reserve judgment and withhold for the present their approval of one of the Pirquet methods, namely, the so-called pelidisi index of nutrition in children. This is particularly important because the Wood tables are now in quite general use in this country, especially in our schools, and the introduction of a new system, unless proved greatly superior, would have a disastrous effect on much of the nutritional work now at last beginning to make headway against popular prejudice and apathy.

Since reviewing Pirquet's system a year and a half ago (*American Journal of Diseases of Children* **19**:478 [June] 1920), I have been attempting to evaluate the Pirquet index of nutrition known at first as gelidusi, later as pelidisi. At my suggestion, Dr. Philip King Brown, chairman of the San Francisco Tuberculosis Association, included the sitting height in the measurements to be taken of 50,000 schoolchildren during a survey carried out by him for the California and San Francisco tuberculosis associations nearly a year ago. The tabulations, not yet completed, will include studies of the relation of sitting height and stature to weight based on perhaps the largest mass of material so far studied. Through the courtesy of Dr. Brown, I have had access to the data and have tabulated those of two of the schools (the Madison and the Michelangelo) examined several months later by Dr. Carter, calculating both the pelidisis and the percentages of underweight and overweight by the Wood tables, thus obtaining a direct comparison of the two scales in a fairly large series of children, 984 in all. From this series certain fairly definite conclusions can already be drawn.

The average of the whole group was 0.9 per cent. overweight by the Wood tables and 95.3 (pelidisi) by the Pirquet scale. By the former standard, 20.7 per cent. of the children were 7 per cent. or more underweight, and about 11 per cent. of them, 10 per cent. or more underweight. According to the Pirquet dictum that pelidisi of 94 or less indicates a more or less serious degree of malnutrition, we found that 51 per cent. of the children were below 95, as contrasted with 60 per cent. in Dr. Carter's figures for the same schools less than six months later. It is therefore clear that the Pirquet scale would lead us to regard more than half of our children as malnourished more or less seriously, while the Wood scale shows only one fifth of them in this state if we accept Emerson's criterion of 7 per cent. underweight, or only one ninth of them if we accept Holt's criterion of 10 per cent. underweight.

It may be argued that this is merely a corroboration of Emerson's statement that the Wood tables are too low. Let us analyze the figures further, remembering that Emerson asserts that the Wood tables were *regularly* lower than his own and that by advancing the former six months the two correspond very closely.

Our findings by the Wood and by the Pirquet scales were arranged in two frequency graphs so that the number of cases occurring at 20-15 per cent. underweight, 15-10 per cent., 10-5 per cent. and so on, and similarly the number measuring 85-27 pelidisi, 87-89, 89-91 and so on could be seen at a glance. The cases were found to range from 25 per cent. underweight to 50 per cent. overweight and from pelidisi 85 to pelidisi 115, with the greatest number of cases (255) between 5 per cent. underweight to normal and between 93 and 95 pelidisi (220 cases). The form of the two distributions was quite, though not exactly, similar, and it appeared that in general a difference of 5 per cent. underweight or overweight corresponded with two points in the pelidisi scale. When, however, we came to plot the individual cases on ordinate paper with the Wood percentage on the abscissas and the pelidisis on the ordinates, enormous discrepancies were found. For instance, it might reasonably be expected from the general distribution that the great majority of children showing a percentage of from 0 to 5 per cent. underweight by Wood would also show pelidisi between 93 and 95. This was not the case. Out of the 255 cases in the Wood group, only seventy-five, or 29 per cent., showed the corresponding pelidisis (93-95); and, vice versa, out of the 220 cases in the corresponding Pirquet group, only seventy-five, or 33 per cent., showed the corresponding Wood percentage. Out of the entire series of 984 cases, only 238, or 24.2 per cent., showed comparable indices of nutrition by the two methods, and in many cases the divergences were so great as to be absurd.

The facts presented, even though from a relatively small series of cases, are enough to convince me that one or other (possibly both) of the scales is extremely inaccurate and certainly dangerously misleading if put into practice. From a statistical study of this sort it is impossible to decide which method is at fault. Nevertheless, I do not feel that the matter should be dropped at this point.

The Pirquet system, in spite of the enthusiasm of the Vienna workers, has received severe criticism from several quarters. Hamburger and Jellenig, in Graz, found the index to have an error of not less than 40 per cent. Bachauer has expressed a similar opinion. Pfaundler, in a recent number of the *Zeitschrift für Kinderheilkunde*, made a very exhaustive study of the whole group of stereometric indices to which the Pirquet index belongs and states that, unless age is taken into consideration, they are all by their very nature bound to be incorrect. A similar index, with corrections for age (the Rohrer), based on height and weight was found to be so unsatisfactory in Germany that it had to be abandoned as a standard for the selection of children for free feeding by the Friends' Relief, and a scale similar to the Wood tables substituted.

The fact is that the Pirquet index was devised from certain assumptions, largely theoretical, and put into practice without an adequate experience test. Its theory has been shown to be faulty, and later experience has in several instances cast a very grave suspicion on its practical utility. In the case of the Wood tables we are dealing with the averages of 250,000 direct observations on American children, a mass of basic statistics such as is rarely approached in size in the determination of medical standards. They are, however, soon to be revised on the basis of several million measurements of selected cases, and should then be the final word in the nutritional standards of childhood.

The great argument in favor of the Pirquet index is that in Vienna and a few other places it has led to the selection of children for supplementary feeding with the result that malnutrition has been successfully prevented or relieved among large masses of children. This we may readily grant; yet it seems possible that malnutrition already existing could have been relieved more economically with a more accurate standard. Suppose in the two schools considered above that we had fed the 50 per cent. of children whose Pirquet index was less than 95. We should then have reached 95 per cent. —nearly all but not quite—of the children who were 7 per cent. or more underweight. Assuming the Wood tables to be only approximately correct, we should have accomplished this result by feeding a very large number of children who, to judge by their actual state of nutrition did not need it at all, for of the children with pelidisi below 95, 324, or 33 per cent., were not more than 5 per cent. underweight, and 168, or 17 per cent., were normal or overweight by the Wood tables.

What has been said must not be taken as derogatory to the relief work in Vienna. There the problem was as much to prevent the malnutrition anticipated from economic conditions as to treat malnutrition already present. In this country the problem is a different one. Here the introduction of a less accurate method where a more accurate one is already well established presents too many hazards and might easily prove disastrous.

HAROLD K. FABER, M.D., San Francisco.
Associate Professor of Medicine (Pediatrics), Leland Stanford Junior University School of Medicine.

Laboratory and Therapy.—Recourse to laboratory methods saves us from making a saltus empiricus and so precipitating ourselves into fallacies. When laboratory methods are at disposal we, instead of trusting to the remote effects which make themselves sensible to the unaided senses, adjudicate by direct effects.—A. Wright, *Lancet* **2**:645, 1921.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

ALBERT'S DIPHTHERIA BACILLUS STAIN — ANILIN METHYL VIOLET

To the Editor:—Will you publish the formula (1) for Albert's diphtheria bacillus stain and (2) for anilin methyl violet?

C. CRESTON COLLINS, M.D., Crisfield, Md.

ANSWER.—1. Albert's method for staining the diphtheria bacillus was published in full in THE JOURNAL, Jan. 22, 1921, p. 240. The formulas of the solutions used are as follows:

SOLUTION 1

Toluidin blue	0.15 gm.
Methyl green	0.20 gm.
Acetic acid (glacial)	1.00 c.c.
Alcohol (95 per cent.)	2.00 c.c.
Water (distilled)	100.00 c.c.

After standing for one day, the solution is filtered and is ready for use.

SOLUTION 2

Iodin	2 gm.
Potassium iodid	3 gm.
Water (distilled)	300 c.c.

The solution is ready for use as soon as the iodin is dissolved entirely. Smears are made on slides or cover glasses; fixed by heat; stained with Solution 1 for one minute; washed with water; dried with good absorbent filter paper; stained with Solution 2 for one minute; washed and dried with filter paper. The granules of the diphtheria bacillus are stained black; the bars, dark green and the intermediate portions a light green. Virtually all other bacteria also take a light green stain.

2. Anilin methyl violet is prepared as follows: Fourteen cubic centimeters of saturated alcoholic solution of methyl violet are added to 126 c.c. of freshly prepared anilin water. The saturated alcoholic solution is made by adding 4.8 gm. of the dye to each 100 c.c. of 95 per cent. alcohol and dissolving. The anilin water is made by adding 5 c.c. of anilin to 125 c.c. of distilled water; the mixture is shaken, and filtered through a double layer of filter paper well moistened with distilled water.

PREPARATION OF GLUCOSE SOLUTIONS

To the Editor:—Please inform me in regard to the best way of preparing, in emergency cases, glucose serum when none is locally available. Kindly emit my name.

H. H., Colombia.

ANSWER.—Our correspondent probably refers to glucose solutions which may be administered by hypodermic or intravenous injections. To prepare these, from 100 to 150 gm. of anhydrous *d*-glucose are dissolved in 1,000 c.c. of distilled water or physiologic solution of sodium chlorid, the solution filtered and sterilized by boiling or heating in an autoclave. The glucose may be added to from 1 to 3 per cent. acacia solutions for treatment of hemorrhage and shock. As enemas, from 5 to 12 per cent. glucose solutions are used.

DELANO'S RHEUMATISM CURE

To the Editor:—Can you furnish me with the composition of "Delano's for Rheumatism" made by the Delanos Company, Inc., Syracuse, N. Y.? I have looked over my files for the past two years and can find no reference to it.

F. L. MAGUNE, M.D., Worcester, Mass.

ANSWER.—We have never had a sufficient number of inquiries to warrant us incurring the expense of analyzing "Delano's Rheumatic Conqueror." The state chemists of North Dakota analyzed the stuff a few years ago and reported: "This preparation is essentially starch, with a small amount of talc, containing a little quinin, coated with calcium carbonate."

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALABAMA: Mongtomery, Jan. 10. Chairman, Dr. Samuel W. Welch, Montgomery.

ARIZONA: Phoenix, Jan. 3-4. Sec., Dr. Ancil Martin, 207 Goodrich Bldg., Phoenix.

DELAWARE: Wilmington, Dec. 13. Sec., Reg. Bd., Dr. P. S. Downs, Dover; Sec., Homeo. Bd., Dr. H. W. Howell, 824 Washington St., Wilmington.

HAWAII: Honolulu, Jan. 9. Sec., Dr. G. C. Milnor, 401 Beretania St., Honolulu.

INDIANA: Indianapolis, Jan. 10. Sec., Dr. Wm. T. Gott, Crawfordsville.

KENTUCKY: Louisville, Dec. 6. Sec., Dr. A. T. McCormack, 532 W. Main St., Louisville.

LOUISIANA: New Orleans, Dec. 1-3. Sec., Dr. Roy B. Harrison, New Hibernia Bank Bldg. New Orleans.

MARYLAND: Baltimore, Dec. 13. Sec., Dr. J. McP. Scott, 141 W. Washington St., Hagerstown.

MINNESOTA: Minneapolis, Jan. 3-5. Sec., Dr. Thomas S. McDavitt, 539 Lowry Bldg., St. Paul.

NEW MEXICO: Santa Fe, Jan. 9-10. Sec., Dr. R. E. McBride, Las Cruces.

NORTH DAKOTA: Grand Forks, Jan. 3. Sec., G. M. Williamson, 860 Belmont Ave., Grand Forks.

OHIO: Columbus, Dec. 7-9. Sec., Dr. H. M. Platter, Hartman Hotel Bldg., Columbus.

OKLAHOMA: Oklahoma City, Jan. 10-11. Sec., Dr. J. M. Byrum, Shawnee.

OREGON: Portland, Jan. 3. Sec., Dr. U. C. Coe, Stevens Bldg., Portland.

PENNSYLVANIA: Philadelphia, Jan. 3-9. Sec., Mr. Thomas E. Finnegan, State Capitol, Harrisburg.

PORTO RICO: San Juan, Jan. 3. Sec., Dr. M. Quevedo Baez, Box 804, San Juan.

RHODE ISLAND: Providence, Jan. 3-6. Sec., Dr. Byron U. Richards, State House, Providence.

SOUTH DAKOTA: Pierre, Jan. 17. Director, Dr. H. R. Kenaston, Bonesteel.

UTAH: Salt Lake City, Jan. 3. Director, Mr. J. T. Hammond, Capitol Bldg., Salt Lake City.

VIRGINIA: Richmond, Dec. 13-16. Sec., Dr. J. W. Preston, McBain Bldg., Roanoke.

WASHINGTON: Olympia, Jan. 10. Director, Mr. Fred J. Dibble, Olympia.

WEST VIRGINIA: Charleston, Jan. 10. Sec., Dr. W. T. Henshaw, Charleston.

WISCONSIN: Madison, Jan. 10-12. Sec., Dr. John M. Dodd, 220 E. Second St., Ashland.

South Carolina June Examination

Dr. A. Earle Boozer, secretary, South Carolina State Board of Medical Examiners, reports the oral, written and practical examination held at Columbia, June 28-30, 1921. The examination covered 17 subjects and included 85 questions. An average of 75 per cent. was required to pass. Of the 24 candidates examined, 22 passed and 2, including 1 chiropractor, failed. Eight candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Grad. Year	Per Cent.
Howard University		(1920)	92.2
University of Georgia		(1921)	81.7
Columbia University		(1910)	91.6
Leonard Medical College		(1911)	78.1
Western Reserve University		(1921)	86.7
Jefferson Medical College		(1921)	89.5, 93.4, 93.4
University of Pennsylvania		(1921)	85.1
Medical College of the State of South Carolina		(1921)	79.6, 82, 82.7, 84.7, 88.6, 91.4, 91.9, 92.5, 96.1
Memphis Hospital Medical College		(1901)	81.1
Vanderbilt University		(1921)	87.1
University of Cambridge		(1900)	93.6
Osteopath			80.7
	FAILED		
Meharry Medical College		(1907)	67

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Georgia		(1914), (1918)	Georgia
Maryland Medical College		(1912)	Maryland
Tufts College Medical School		(1916)	Georgia
Woman's Medical College of the New York Infirmary for Women and Children		(1890)	New Hamp.
North Carolina Medical College		(1911), (1912)	N. Carolina
Jefferson Medical College		(1912)	N. Carolina

Utah July Examination

Mr. J. T. Hammond, director, Department of Registration of Utah, reports the written examination held at Salt Lake City, July 12, 1921. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Seven candidates were examined, all of whom passed. Two candidates received physicians' and surgeons' licenses by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
George Washington University		(1921)	79.8
Columbia University		(1920)	79.4
Western Reserve University		(1921)	84.6
Jefferson Medical College		(1921)	85.2, 85.2
University of Pennsylvania		(1920) 84.9, (1921)	84.4

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Osteopaths			Arizona (2)

Book Notices

A PRACTICAL TREATISE ON DISEASES OF THE SKIN. For the Use of Students and Practitioners. By Oliver S. Ormsby, M.D., Professor and Head of the Department of Skin and Venereal Diseases, Rush Medical College. Second edition. Cloth. Price, $10. Pp. 1166, with 449 illustrations. Philadelphia: Lea & Febiger, 1921.

In preparing a new edition of his textbook on dermatology, Ormsby has rewritten some 400 pages. In order to make easy the use of periodical literature, his references have been selected so as to cite chiefly articles which themselves review the complete literature of the subjects they discuss. Dr. Ormsby precedes the consideration of individual diseases by general discussions of anatomy, physiology, etiology, pathology, diagnosis and treatment. As is well known, the language of dermatology is technical and specific for that specialty. The ordinary terms of pathology apply only in part, so that the student must first of all acquaint himself with this new terminology before he is able to understand thoroughly the discussions which follow. One of the most valuable features of this general consideration is an outline for the methodical examination of a patient affected with skin disease. The materia medica of dermatology is also a special matter. To an average physician a salve means petrolatum and another ingredient, but to the dermatologist, the composition of a satisfactory ointment for a particular condition is a form of weird and remarkable alchemy. The discussions of radiotherapy, phototherapy and radium are brief, but as complete as they probably should be for a textbook much used by general readers. Following this general introduction, the diseases of the skin are taken up according to a classification which closely follows that suggested by Hebra. One of the most satisfactory features of the book is the inclusion of both apothecary and metric measurements in all prescriptions, the quantities being in easily measurable units. The literature of modern dermatology has been thoroughly reviewed, and the book is in every sense up to date. The illustrations, many of them new, are satisfactory, the entire volume being printed on a coated paper which yields good results. The index is extraordinarily comprehensive. Dr. Ormsby's book is well suited both for textbook and for reference purposes.

NUTRITION AND CLINICAL DIETETICS. By Herbert S. Carter, M.A., M.D., Assistant Professor of Medicine, Columbia University; Paul E. Howe, M.A., Ph.D., Associate in Animal Pathology, Rockefeller Institute for Medical Research, and Howard H. Mason, A.B., M.D., Instructor in Diseases of Children, Columbia University, New York. Second edition. Cloth. Price, $7.50. Pp. 703. Philadelphia: Lea and Febiger, 1921.

In preparing a new edition of this standard textbook, the authors have carefully revised the chapters on energy, metabolism and digestion, have entirely rewritten the chapter on vitamins, and have added a new chapter on metabolism in pregnancy and lactation with the feeding of children over 2 years old. Throughout the text there has been careful elimination of obsolete material, and an addition of new matter brought out by periodical literature. The book thus continues to merit commendation for its completeness. For example, under the subject of "diet in peptic ulcer" there are detailed accounts of the von Leube, Lenhartz, Sippy and other methods. Under the heading of "obesity," ten dietary regimens are outlined. One chapter is devoted to such unusual subjects as artificial methods of feeding, diet in pregnancy, and diet for speakers and singers, for brain workers and for athletes. The last chapter consists entirely of tabulations of food values, weights and measures, including the well known Atwater and Bryant and Fisher tables.

MIKROMETHODIK. Quantitative Bestimmung der Harn- und Bluthbestandteile in kleinen Mengen für klinische und experimentelle Zwecke. Von Dr. med. et phil. Ludwig Pincussen, wissenschaftlichem Assistenten der II Medizinischen Universitätsklinik zu Berlin. Paper. Price, 28 marks. Pp. 116, with 19 illustrations. Leipzig: Georg Thieme, 1921.

The field of "micro-analysis" has assumed, in recent years, considerable importance, especially in chemical analysis of the blood constituents, so that the laboratory worker who would keep abreast of the times must know the technic and pitfalls of these methods. This little monograph makes no claim as to completeness. It contains only those methods which have been thoroughly tried out in the author's laboratory and are employed in his courses of instruction. The selection of methods by Pincussen is not, perhaps, always the best, as he largely ignores most of the excellent methods devised by Folin and his associates, and by Benedict, Myers, Bloor and other American workers. The descriptions are clear and concise, the methods outlined are, if not the best, at least acceptable, and the scope of the work is sufficient for the daily routine of the general or hospital laboratory. The book may be recommended to those who desire a brief discussion of such micromethods as are employed, especially in foreign laboratories, as a guide for their own laboratory requirements.

EINFÜHRUNG IN DIE ALLGEMEINE KONSTITUTIONS- UND VERERBUNGSPATHOLOGIE. Ein Lehrbuch für Studierende und Aerzte. Von Dr. Hermann Werner Siemens. Paper. Price, 64 marks. Pp. 229, with 80 illustrations. Berlin: Julius Springer, 1921.

This is a praiseworthy attempt to present modern ideas of the principles of genetics to the medical profession, with particular reference to medical problems. It does not attempt to discuss the specific diseases in which heredity may assume a greater or smaller rôle, or to present the accumulated evidence bearing on inheritable characteristics of definite diseases. It is cast on broader lines in order to present the influence of heredity on human development, although, of course, many illustrations are drawn from special cases, as, for example, hemophilia. It can be recommended to those who wish to secure an understanding of the way in which heredity determines human characteristics, both physical and mental. A summary is given of all diseases in which hereditary influences seem to play a part, with a statement as to the relation of this influence to mendelian principles.

Medicolegal

Sufficient Indictment of Illegal Practitioner

(State v. Kirkpatrick (W. Va.), 106 S. E. R. 887)

The Supreme Court of Appeals of West Virginia holds that it was error to quash an indictment which averred that the defendant, without first having complied with Sections 9, 10 and 11 of Chapter 150 of the Code of West Virginia governing applicants and the issuing of certificates of license to practice medicine and surgery in the state of West Virginia, and without first having obtained a license so to do, as required by the laws of the state, did unlawfully practice medicine and surgery, as defined in Chapter 150, Section 8 a XII Supplement 1918 of the Code. The indictment sufficiently charged the offense prescribed by the statute, and sufficiently negatived the fact of the defendant's being of the first class of practitioners described in Section 9, which provides that the following persons shall be permitted to practice medicine in the state: "(1) All such persons as shall be legally entitled to practice medicine in this state at the time of the passage of this act. (2) All such persons as shall be graduates of a reputable medical college," etc. As Sections 10 and 11 referred to in the indictment relate to the obtaining and recordation of certificates or licenses issued, and to the proof required of applicants of their educational qualifications to practice, etc., they were not particularly important in the disposition of the case presented. While practitioners of medicine and surgery since the amendment of Section 9 by Chapter 22 of the Acts of 1889 have not been required to submit themselves to examination and obtain new certificates of license, nevertheless prior to that amendment and since the amendment and reenactment of Chapter 150 in 1882, they have been required to have such certificates of license as a condition of the right to practice medicine and surgery. Always since 1882 a practitioner has been required to have a license or certificate; since then, if he had a license issued prior to that time he was not required to submit to an examination or procure a new or additional license; but at no time since 1882 has any one been entitled to practice medicine in West Virginia without a license or certificate from the proper authority. In an indictment for a statutory offense like the one described, the pleader need negative only exceptions, not provisos, of the statute.

Inquiry Required of Institutions Receiving Bodies—Cremation After Dissection

(Burke et al. v. New York University (N. Y.), 188 N. Y. Supp. 123)

The Supreme Court of New York, Appellate Division, First Department, reverses a judgment which sustained a demurrer to a complaint for the alleged unlawful dissection and subsequent destruction of the body of the father of the plaintiffs, which had been received from the city morgue, the reversal being with leave to the defendant to withdraw the demurrer and to answer, on payment of costs. The court says that the defendant claimed its rights to dissect under Section 316 of the public health law, which requires any hospital or morgue having any uninterred corpse in its lawful possession for keeping or burial, which has not been placed therein in the usual manner by relatives for that purpose, to deliver such corpse under specified conditions to any university of the state having a medical preparatory or medical postgraduate course. It is provided, however, that:

> No corpse shall be so delivered or received if desired for interment by relatives or friends within forty-eight hours after death, or, if known to have relatives or friends, without the assent of such relatives or friends; or of a person who shall have expressed a desire . . . that his body be interred, but the same shall be buried in the usual manner.

The lower court held that the primary duty of endeavoring to ascertain whether there were relatives or friends rested with the authorities at the morgue, and did not rest with the defendant before receiving this corpse for dissection. The appellate division, thinks, however, that there is also an obligation on the medical school or university to make reasonable inquiry. There was no allegation in the complaint that the defendant failed to make reasonable inquiry. The contention of the plaintiffs was that all that was necessary to do was to allege a dissection without their consent, and that it was for the defendant to plead the facts which justified such a dissection. This contention was well made. The dissection of a human body without the consent of the relatives or friends is under the common law a wrongful act. If the defendant would justify that act under any special statute, the facts that would bring the defendant within the statute and authorize the act are properly pleaded as an affirmative defense. Those facts need not be negatived in the complaint, which is sufficient if a wrong under the common law has been alleged.

Irrespective, however, of the statement of the cause of action for the dissection, the complaint stated a cause of action for the cremation of the body. Under Section 2215 of the penal code, it is provided that after dissection the body shall be buried. The cremation of the body was therefore clearly a wrongful act, and was just as actionable as the dissection itself.

Society Proceedings

COMING MEETINGS

American Association of Anatomists, New Haven, Conn., Dec. 28-30.
American Physiological Society, New Haven, Conn., Dec. 28-30.
Am. Soc. for Pharm. and Exper. Therap., New Haven, Conn., Dec. 28-30.
Porto Rico, Medical Association of, San Juan, Dec. 10-11.
Radiological Society of North America, Chicago, Dec. 7-9.
Society of American Bacteriologists, Philadelphia, Dec. 27-29.
Southern Minnesota Medical Association, Mankato, Dec. 5-6.
Southern Surgical Association, Pinehurst, N. C., Dec. 13-15.
Western Surgical Association, St. Louis, Dec. 9-10.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Archives of Neurology and Psychiatry, Chicago

November, 1921, **6**, No. 5

*Case of Sleep Lasting Five Years, with Loss of Sense of Reality. P. Janet, Paris, France.—p. 467.
*Successful Removal of Brain Tumors. Report of Eight Cases. W. G. Spiller and C. H. Frazier, Philadelphia.—p. 476.
Acute Ascending Myelitis of Infectious Type. Its Possible Relationship to Poliomyelitis in Certain Group of Cases. L. M. Morris, San Francisco and V. C. Jacobson, Boston.—p. 509.
*Ossification of Meninges. C. A. McKendree and H. M. Imboden, New York.—p. 529.
Character of Onset of Spinal Paralysis with Reference to Significance of Apoplectiform Type of Onset in Contrast to Slow Progressive Development of Paralysis. W. B. Cadwalader, Philadelphia.—p. 541.
Case of Family Periodic Paralysis. M. Neustaedter, New York.—p. 560.

Delusion of Sleep.—Janet's case was one of psychasthenic depression with doubt and fear of life, producing a delusion of sleep and the appearance of sleep for five years.

Classification of Brain Tumors.—Besides reporting eight cases Spiller and Frazier present a classification of brain tumors. The following cases have been selected as representing tumor types and various locations: (1) an endothelioma of the left occipital lobe; (2) a tuberculoma of the parietal lobe near the motor cortex; (3) an encapsulated glioma of the motor area; (4) a calcified endothelioma of the falx; (5) an unusually small endothelioma near the motor cortex; (6) a fibroma of the posterior fossa origin undetermined; (7) a glioma of the cerebellar hemisphere; (8) an acoustic tumor (fibroma).

Ossification of Meninges.—The essential findings in the case cited by McKendree and Imboden were: history of headaches over a period of nine years; vomiting, occurring at any time of night or day at irregular intervals, aggravated by exercise; pathologically increased deep reflexes of the right upper extremity and bilateral Hoffmann's sign; facial weakness of the central type on the left; roentgenogram of the skull revealed extensive ossification of the meninges.

Archives of Surgery, Chicago

November, 1921, **3**, No. 3

*Pathology of Chronic Cystic Mastitis of Female Breast. With Special Consideration of Blue-Domed Cyst. J. C. Bloodgood, Baltimore.—p. 445.
Achievements and Limitations of Neurologic Surgery. C. H. Frazier, Philadelphia.—p. 543.
*Review of Year's Series of Intracranial Tumors. C. E. Locke, Jr., Boston.—p. 560.
*Postoperative Biliary Fistulas. D. C. Balfour and J. W. Ross, Rochester, Minn.—p. 582.
*Suspension Traction Treatment of Fractures of Long Bones Near Large Joints. J. A. Hartwell, New York.—p. 595.
*Relation of Surgical Technic to Gastrojejunal Ulcer. C. A. Roeder, Omaha.—p. 622.
*Method of Determining Early Regeneration of Nerve Fibers at Operation. J. Y. Malone, St. Louis.—p. 634.
*Intestinal Obstruction. D. K. Bacon, R. E. Anslow and H. H. Eppler, Detroit.—p. 641.

Chronic Cystic Mastitis.—This paper is too lengthy and "meaty" to lend itself to condensation. Bloodgood describes chiefly the pathology of the various types of chronic cystic mastitis as exposed by an exploratory incision. A few points made are: the number of benign tumors in women, more than 25 years of age, in whom it is necessary to remove only the tumor, is too large to justify the removal of the breast, or to perform the complete operation for cancer without first ascertaining the pathology of the palpable lump by exploratory incision. The educational propaganda is influencing many women to seek immediate advice because of pain or the palpation of a lump in the breast. It is, therefore, of the greatest importance for all members of the profession who assume the responsibility of diagnosing breast lesions to improve their sense of palpation.

Intracranial Tumors.—Locke makes an analysis of 255 cases from Cushing's service at the Peter Bent Brigham Hospital in which the presumptive diagnosis of "brain tumor" was made.

Postoperative Biliary Fistulas.—In the series of operations in 166 cases of biliary fistulas reported on by Balfour and Ross there were sixteen deaths, a mortality of 10 per cent. In operations undertaken for various conditions which were responsible for fistulas, the percentage of deaths shows very clearly the relative risks which accompany these operations. For instance, in thirty-five cases of stone in the cystic duct, no operative mortality occurred, while in the groups "division of the common duct" and "stricture of the common or hepatic ducts," six deaths in twenty-one cases were due largely to chronic jaundice and sequels so common in such cases.

Suspension Traction Treatment of Fractures.—It is Hartwell's belief that with proper attention practically every fracture through the middle third of a long bone can be treated successfully by the traction suspension method, and that the results will be more promptly obtained and better functionally than by other methods. However, it is a method that can be applied only after considerable experience, and the attention to details that many surgeons are unwilling to give.

Relation of Surgical Technic to Gastrojejunal Ulcer.—Roeder emphasizes that: (1) the so-called gastrojejunal ulcer is very likely the direct result of operative procedures; (2) every effort should be made to simulate Nature as much as possible by leaving the mucosa superabundant, with a free blood supply; and (3) in the technic of gastro-intestinal surgery, the mucosa should always be sutured separately close to the edge. No sutures should be passed through all three coats at one time since such a procedure strangulates the mucosa, later immobilizing it with scar tissue, which in addition shuts off the blood supply.

Determining Early Regeneration of Nerve Fibers.—When a peripheral nerve is stimulated, by the application of cold to the skin in human beings or by direct stimulation of the trunk in animals, there is a reflex stimulation of the respiration, blood pressure and reflex contraction of muscles innervated by nerves other than the one stimulated. These phenomena are so well established and constant that Malone uses them as an index of regeneration when the nerve trunk is exposed at operation. The method he describes would seem to be particularly useful in early cases as the test was positive after five weeks in dogs.

Water Balance in Intestinal Obstruction.—Bacon and his associates report on experimental work undertaken by them to determine the influence, if any, of the water balance of the body on the progress of intestinal obstruction. From an experimental standpoint water deprivation is the most important, if not the sole, factor in the production of the pseudo-uremia of intestinal obstruction. Viewed in this light, the condition becomes a pseudo-uremia of thirst rather than of intestinal obstruction; an increase in the rate of protein catabolism where insufficient fluid exists, combined with a lack of water as a vehicle for excretion of the toxic split products as they accumulate in the blood.

Boston Medical and Surgical Journal

Nov. 10, 1921, **185**, No. 19

*Surgical Aspects of Intra-Abdominal Tuberculosis in Infancy and Childhood. C. G. Mixter, Boston.—p. 558.
Intussusception. Symptoms. J. S. Stone, Boston.—p. 562.
Acute Intussusception. Surgical Treatment; Report of Cases. F. V. Hussey, Providence, R. I. —p. 564.
Diphtheria of Larynx, Trachea and Bronchi Associated with Papilloma of Larynx. E. A. Meserve, Boston.—p. 568.
*Squamous Cell Carcinoma of Antrum Treated with Radium. J. H. Blaisdell, Boston.—p. 570.
Monitor Ventilation. W. A. Griffin, Sharon, Mass.—p. 572.
Pessary Worm Without Removal for Eleven Years. C. J. Kickham, Boston.—p. 574.

Intra-Abdominal Tuberculosis in Infancy.—One hundred and twenty cases were analyzed by Mixter. The miliary type of tuberculosis is usually seen in infancy. The ascitic and plastic types occur most frequently between the ages of 2 and 8, while mesenteric adenitis is more often found in older children. A family history of tuberculosis or known exposure, was elicited in only twelve of the 120 cases. This point is suggestive evidence to Mixter that tuberculous peritonitis is one of the most frequent varieties dependent on the bovine bacillus, as is also the fact that the relative number of such cases has apparently decreased during the last decade. It

seems probable that the adequate supervision of milk supplies is responsible for this decrease. Tubercular infections in childhood have a predilection for lymph glands, and intra-abdominal infections are no exception to this rule. The glands of the ileocecal angle and terminal ileum almost invariably show the greatest involvement. The process may be limited at this point as a tuberculous mesenteric adenitis or it may become disseminated by breaking through its limiting capsule and develop as a tuberculous peritonitis. There were forty-nine cases of the ascitic type in Mixter's series. Twelve patients were not subjected to operation. Seventeen were treated by simple laparotomy and nineteen had air or nitrogen injections. Lapartomy is indicated in the ascitic type of the disease where an active process elsewhere can be ruled out, and the child is not progressing favorably under medical treatment. The mortality is lowered and the convalescence is hastened. Results thus far suggest that air injection may give more beneficial results than simple laparotomy. The plastic stage of tuberculous peritonitis is represented by fifty-three cases. Surgery has nothing to offer in the treatment of plastic tuberculous peritonitis, save in meeting the complications and emergencies as they arise. The prognosis is bad though ocasionally an inexplicable good result will follow an operation undertaken for the purpose of diagnosis or even following relief of an acute obstruction. Hygienic treatment is of paramount importance. Surgery should only aid and never supplant it.

Radium Therapy in Cancer of Antrum.—Blaidsdell reports a case treated with radium alone that is free from recurrence twenty-two months after the last application. The clinical diagnosis was confirmed by microscopic examination.

Nov. 17, 1921, **185**, No. 20

Work of Joint Committee on State and National Legislation. J. S. Stone, Boston.—p. 587.
Criteria of Roentgen-Ray Diagnosis. F. W. O'Brien, Boston.—p. 591.
Typhoid Fever. D. O'Hara, Waltham, Mass.—p. 594.
*Gastrogastrostomy for Hour-Glass Stomach. W. H. Rose, Worcester, Mass.—p. 597.
Nasal Hemorrhage. J. Prenn, Boston.—p. 509.
Nonspecific Protein Therapy. J. C. Potter, Framingham, Mass.—p. 601.

Gastrogastrostomy for Hour Glass Stomach.—Rose reports two cases of hour glass stomach in which a gastrogastrostomy was performed with great comfort and relief to the patients.

California State Journal of Medicine, San Francisco

November, 1921, **19**, No. 11

Anatomic Study of Eight Cases of Degeneration of Cornea. C. Maghy, Chicago.—p. 424.
Public Health and Medical Welfare. P. K. Brown, San Francisco.—p. 425.
Neurologic Findings in One Thousand Group Study Cases. T. G. Inman, San Francisco.—p. 428.
*Metabolism Studies in Pulmonary Tuberculosis. R. A. Kocher, San Diego.—p. 430.
Differentiation of Early Meningitis and Mastoiditis. W. J. Mellinger, Santa Barbara.—p. 433.
Rationale of Radiation in Female Pelvis. A. Soiland, Los Angeles.—p. 434.
Infantile Atrophy. J. Robinson, Anaheim, Calif.—p. 436.
Treatment of Syphilis with Silver-Salvarsan. V. G. Vecki and M. R. Ottinger, San Francisco.—p. 438.
Early Diagnosis and Treatment of Cancer of Cervix. R. E. Skeel, Los Angeles.—p. 438.
*Value of Blood Studies. W. P. Lucas, San Francisco.—p. 441.

Metabolism in Pulmonary Tuberculosis.—In fifteen cases of afebrile pulmonary tuberculosis, eight of which showed active lesions, Kocher found the basal metabolism from a few per cent. above to a few per cent. below the average normal. The effect of giving a meal of 400 gm. lean beef, was determined on two patients. The metabolism was raised 25 to 30 per cent., due to the so-called specific dynamic action of the protein. The effect of a high caloric diet on the rate and depth of respiration was determined. A mixed meal of 1,000 calories increased the ventilation of the lungs, measured as minute volume, 18 to 20 per cent. Creatinin determinations were made on fifteen patients, and show uniformly low coefficients, as compared with the normal. Creatinin determinations over a period of months in convalescents show an increase in the functional efficiency of the body.

Blood Volume.—Studies in blood volume have shown the importance of transfusion when the blood volume is markedly reduced. In cases of acute diarrhea, vomiting, starvation, athrepsia or malnutrition, as soon as food or fluid is given, the blood volume will be rapidly restored as well as the blood flow increased. The importance of the water quotients has thus been definitely determined by a careful study of these blood fractures, and these studies have undoubtedly had more effect on lowering the mortality of these nutritional conditions in infants than any other studies that have been carried on during the last few years.

Illinois Medical Journal, Oak Park

November, 1921, **40**, No. 5

Federal Aid to States a Real Menace. D. Sutherland, Chicago.—p. 353.
Psychopathic Children. G. B. Smith, Alton.—p. 363.
Viscereptosis. J. A. Day, Springfield.—p. 368.
Safety First in Anesthesia. F. H. McMechan, Avon Lake, Ohio.—p. 376.
Butyn: Anesthetic for Ophthalmic Use. H. S. Gradle, Chicago.—p. 382.
Modification of Submucous Resection Operation. O. J. Nothenberg, Chicago.—p. 385.
Retrobulbar Neuritis of Ethmosphenoidal Origin. W. G. Reeder, Chicago.—p. 390.
Intracranial Complications of Nasal Accessory Sinus Disease. C. F. Yerger, Chicago.—p. 395.
Time as an Element in Testing Visual Acuity. S. Rosenblatt, Chicago.—p. 400.

Journal of Experimental Medicine, Baltimore

Nov. 1, 1921, **34**, No. 5

Cicatrization of Wounds. XII. Factors Initiating Regeneration. A. Carrel, New York.—p. 425.
*Remote Results of Complete Homotransplantation of Cornea. A. H. Ebeling and A. Carrel, New York.—p. 435.
*Remote Results of Operations on Pulmonary Orifice of Heart. A. Carrel, New York.—p. 441.
Growth of Fibroblasts and Hydrogen Ion Concentration of Medium. A. Fischer, New York.—p. 447.
Studies on Bacterial Nutrition. III. Plant Tissue, As Source of Growth Accessory Substances, in Cultivation of Bacillus Influenzae. T. Thjotta and O. T. Avery, New York.—p. 455.
Phenomenon of D'Herelle with Bacillus Dysenteriae. M. Wollstein, New York.—p. 467.
*Biologic and Serologic Reactions of Influenza Bacilli Producing Meningitis. T. M. Rivers and L. A. Kohn, Baltimore.—p. 477.
*Tuberculin Reaction and Specific Hypersensitiveness in Bacterial Infection. H. Zinsser, New York.—p. 495.

Homotransplantation of Cornea.—A flap composed of the entire thickness of the cornea of a cat was transplanted by Ebeling and Carrell to the cornea of another cat, and was found to be perfectly transparent two years after the operation. The curvatures of the cornea appeared to be normal.

Results of Operations on Heart Orifice.—In 1913, an attempt was made by Carrel to develop a technic by which the size of the pulmonary orifice of the heart could be increased or decreased. The immediate results of the experiments showed that plastic operations on the wall of the pulmonary artery and its sigmoid valves caused little danger to the life of the animal, when a proper procedure was employed. The purpose of this paper is merely to describe the remote effects of the operations which were virtually nil.

Reactions of Influenza Bacilli Producing Meningitis.—Evidence has been obtained by Rivers and Kohn in favor of the possibility that a certain group of influenza bacilli may have risen to a level of pathogenicity to produce a disease picture known as influenzal meningitis. Of thirteen meningitic strains of *Bacillus influenzae* isolated by different workers during a period of seven years, eleven are alike culturally and fall into two groups by absorption of agglutinin tests; seven are in Group 1, three in Group 2, with one intermediate strain. Two strains stand alone culturally and serologically.

Specific Hypersensitiveness in Bacterial Infections.—It would appear from Zinsser's studies that certain noncoagulable substances of uncertain chemical constitution are being constantly elaborated in the course of bacterial growth, and passed into the circulation of infected animals. As a result of this, infected animals become sensitized to these heat and acid resistant materials, in tuberculosis in the course of one or two weeks; in the case of more rapidly growing bacteria perhaps sooner. Early in the course of infection, the animal becomes sensitized, and subsequently the further elaboration and distribution of these materials from the bacterial focus plays a fundamental part in the injury of the animal. These

proteose-like substances, like tuberculin, possessing but slight toxicity for the normal animal, become highly toxic to the sensitized one. Thus, these substances, while not being true exotoxins in the ordinary sense, would still represent a highly toxic bacterial product comparable in its injurious effect to toxins when produced in the body of an animal thus sensitized. If there is any value in these deductions Zinsser says the attention of bacteriologists should be turned to the nonprotein constituents of bacterial cells in their further immunologic studies, as well as to the protein materials.

Journal of Industrial Hygiene, Boston

October, 1921, **3**, No. 6

Headache. S. Cobb and D. C. Parmenter, Boston.—p. 173.
Medical Supervision in Industry. C. W. J. Brasher, Bristol, England.—p. 179.
Framingham Health Demonstration and Industrial Medicine. D. B. Armstrong.—p. 183.
Study of Accident Records in Textile Mill. A. Hewes, R. Fear, E. Graves, M. Lawrence, F. Metz and H. F. Smith.—p. 187.

Journal of Laboratory and Clinical Medicine, St. Louis

September, 1921, **6**, No. 12

*Apparatus Used in Estimation of Basal Metabolism. C. V. Bailey, New York.—p. 657.
*Distribution of Uric Acid in Blood. R. C. Theis and S. R. Benedict, New York.—p. 680.
Ventilation, Weather, and Common Cold. G. T. Palmer, Detroit.—p. 684.
*Colorimetric Method for Estimation of Morphin in Colloidal Mixtures and Tissues. H. Gauss, Denver.—p. 699.
Hecht-Gradwohl Test Employing Ice Chest Fixation. Preliminary Report. H. D. McIntyre, E. A. Worth and A. P. McIntyre, Cincinnati.—p. 706.
Precipitin Reaction Used as Evidence for Identification of Human Blood in an American Court. J. B. Ekeley, Boulder, Colo.—p. 709.
Mercury Manometer Float That Will Ride on Surface of Mercury Same at All Times. M. A. Blankenhorn and E. J. Warnick, Cleveland.—p. 710.

Apparatus for Basal Metabolism Determination.—A detailed description is given by Bailey of an apparatus used by him in determining the respiratory exchange in man. The arrangement described is suitable for routine laboratory or institutional use in determining the basal metabolism. The particular features are the use of the full-sized gas mask, the special arrangement of rubber flutter valves, a newly designed gasometer, the use of a new type of gas-sampling bottle in conjunction with the Henderson-Haldane gas-analysis apparatus with several added mechanical features which greatly lessen the labor of gas analyses.

Uric Acid in Blood.—Uric acid was determined by Theis and Benedict in plasma and corpuscles in 104 cases, fifty-one of which showed equal distribution; forty-five showed plasma uric acid greater than corpuscle uric acid and eight showed a greater amount of uric acid in the corpuscles than the plasma. This relationship holds whether the blood is oxalated or defibrinated and does not depend on the pathologic condition. Added uric acid did not penetrate the corpuscles in 70 per cent. of twenty bloods studied. In 30 per cent. of the cases the added uric acid was equally distributed between corpuscles and plasma. The marked difference in permeability of the corpuscles of certain bloods for added uric acid is of interest, and suggests that other cells in the body may show similar differences in permeability. Such findings may tend to throw light on the questions involved in specific uric acid retention in the organism.

Colorimetric Estimation of Morphin. — A quantitative colorimetric method for the estimation of morphin sulphate in tissues and organic colloidal mixture is described by Gauss. There is a preliminary precipitation of the proteins by means of ten volumes of 3 per cent. trichloracetic acid and subsequent extraction with hot chloroform. The color utilized in this reaction is the purple red reaction with Marquis' reagent which is evanescent. The standard color is prepared by adding a known amount of the alkaloidal salt to a known volume of Marquis' reagent, similarly and simultaneously with the preparation of the unknown. By means of this method Gauss has been able to extract quantitatively morphin sulphate from tissues and colloidal solutions in amounts from 0.10 to 50.0 mg. and to determine it colorimetrically in amounts as low as 0.003 mg.

Medical Record, New York

Nov. 12, 1921, **100**, No. 20

Menstrual Disturbance and Pain in Tubal Pregnancy. L. Broun, New York.—p. 839.
Importance of History in Diagnosis of Surgical Affections of Right Upper Quadrant. C. G. Heyd, New York.—p. 842.
Details in Dermatology. C. M. Williams, New York.—p. 845.
*Chronic Nephritis with Bence-Jones Proteinuria. W. Walters, Rochester, Minn.—p. 847.
*Case of Permanent Homonymous Hemianopsia Following an Attack of Migraine. A. Wiener, New York.—p. 849.
Application of Ozone to Purification of Swimming Pools. W. A. Manheimer, New York.—p. 851.
Quino-Formol Solution in Treatment of Infections. J. T. Pilcher, Brooklyn.—p. 852.
Reform or Fanaticism? L. F. Herz, New York.—p. 853.
Sensitization to Fowl Protein Misinterpreted as of Mental and Nervous Origin. J. L. Tracy, Toledo.—p. 855.
Education in Relation to Use of Medical Knowledge. H. S. Bennett, Washington, D. C.—p. 857.

Chronic Nephritis with Bence-Jones Proteinuria.—A case of Bence-Jones proteinuria is reported by Walters in which there was definite evidence of progressive renal insufficiency denoted by extremely low excretions of phenolsulphonephthalein and the retention of large amounts of uric acid, urea, nonprotein nitrogen and creatinin in the blood. The effect was studied of radium exposure over two inguinal masses which may have been the primary causative factor in the production of the Bence-Jones proteinuria. The result was entirely negative in every way. This is the fourth case of Bence-Jones proteinuria discovered in the examination of 31,487 patients.

Hemianopsia Following Migraine.—The case is cited by Wiener of a young woman, who manifested no evidence of heart, kidney or arterial disease; no syphilis; no tuberculosis, and all examinations were negative. With the exception of repeated attacks of migraine, this patient has been free from any serious disease or complaints. During a severe attack of migraine she suffered a left hemianopsia from which she shows not the slightest improvement. Wiener inclines to the belief that a vasoconstriction, sufficient to produce an ischemia, resulted in a destruction of the visual area and a probable softening of the same. Whether the eating of a cake of yeast two hours before the onset of the attack may have been a factor, or some toxemia which resulted in an unusual viscosity of the blood, thus encouraging the formation of a thrombus in such a constricted vessel, is the problem propounded by Wiener.

Military Surgeon, Washington, D. C.

November, 1921, **49**, No. 5

History of Military Medicine. F. H. Garrison.—p. 481.
Etiology of Scurvy. E. B. Vedder.—p. 502.
Differential Diagnosis of Common Intestinal Amebae of Man. C. F. Craig.—p. 513.
Color Blindness; Objections to Few Color Perception Tests Now in Use. E. J. Grow.—p. 528.
Chronic Empyema. E. F. Butler and A. D. Haverstock.—p. 544.
Protection Afforded by Antipneumococcus Vaccination Against Respiratory Infections. P. F. McGuire, W. C. Cox and J. D. Nourse.—p. 559.
Four Centuries in Treatment of Syphilis. L. W. Shaffer.—p. 566.

Missouri State Medical Association Journal, St. Louis

November, 1921, **18**, No. 11

Duodenal Ulcer. H. K. Wallace, St. Joseph.—p. 377.
*Analysis of One Hundred Cases of Splanchnoptosis. E. Schisler and E. E. Brown, St. Louis.—p. 379.
Causes of Disease. M. T. Burrows, St. Louis.—p. 384.
Thermophore Treatment of Ocular Neoplasms. W. E. Shahan, St. Louis.—p. 392.
Ear Complications in Measles. O. J. Dixon, Kansas City.—p. 393.
New Operation for Cure of Nasal Hemorrhage. H. Miller, Kansas City.—p. 396.
Importance of Correcting Small Refractive Errors for Patients with Symptoms of Eye Strain. J. P. McCann, Warrensburg.—p. 398.
*Pathological Fractures. L. Rassieur, St. Louis.—p. 400.

Splanchnoptosis.—In the series of cases studied by Schisler and Brown a visceroptotic condition of greater or less degree was demonstrated in 99 per cent. of the cases. They presented the usual symptoms of epigastric pain, nausea with or without vomiting, eructation of gas, sense of fulness after eating, constipation, flatulency and malaise with loss of appetite. Sixty-one per cent. showed some degree of gastric dilatation. Hypomotility or hypermotility, visible peristalsis

or pyloric spasm were not constantly present. The next most commonly affected organ was the kidney. The right kidney was found displaced usually in the right iliac region (38 per cent.) and freely movable, palpable in 60 per cent. of the cases. The left was only freely movable in 1 per cent. but palpable in 8 per cent. Both kidneys were palpable in 7 per cent. The liver was found palpable in 23 per cent. of the cases; in 25 per cent. there was found a slight tenderness in the gallbladder region. The spleen was found in the prolapsed state only in one case. The most common complication is some affection of the reproductive organs. Eighty-five per cent. of these patients were affected in this way. Twenty-three per cent. had been operated on and were not relieved from symptoms. Three per cent. had been relieved. A history of chronic appendicitis was given in 47 per cent., 22 per cent. had been operated on without relief from symptoms. The most effective method of treatment is: correction of abdominal position by a front-lace corset; proper diet; exercise, in several cases, rest cure. When in rare cases the symptoms are so severe and distressing that they do not respond to the combined measures above, then and then only is surgical interference warranted.

Pathologic Fractures.—Of 588 fractures analyzed by Rassieur five were unquestionably distributed as follows: femur (subtrochanteric), 3; upper epiphyseal line of the tibia, 1; lower end of the tibia, 1. Three of the five patients died shortly after they entered the infirmary. The causes of these fractures were syphilis and sarcoma.

Nebraska State Medical Journal, Norfolk

November, 1921, **6**, No. 11

One Hundred and Fifty Cases of Gallbladder Disease. J. S. Welch and S. O. Reese, Lincoln.—p. 329.
Five Hundred and Sixty-Three Cases of Gallbladder Disease. B. B. Davis, Omaha.—p. 336.
Gastroduodenostomy Versus Gastrojejunostomy. H. B. Boyden, Grand Island.—p. 342.
Acute Intestinal Obstruction. A. L. Cooper, Morrill.—p. 347.
Civilian Surgeon's Story of Great War. H. W. Orr, Lincoln.—p. 350.
Case of Enlarged Thymus with Necropsy Report. F. Clark and J. H. Murphy, Omaha.—p. 354.
Case of Hypernephroma with Necropsy Findings. W. Thompson, Omaha.—p. 355.

New Jersey Medical Society Journal, Orange

November, 1921, **18**, No. 11

Cancer of Stomach. F. B. Lund, Boston.—p. 345.
Carcinoma of Female Pelvic Organs. E. J. Ill, Newark.—p. 349.
Response of Various Types of Cancer to Radium. D. Quick, New York.—p. 350.
Roentgen Rays in Treatment of Cancer. E. Reissman, Newark.—p. 355.
Ten Commandments of Cancer. F. H. Martin, Chicago.—p. 356.

Philippine Islands Medical Association Journal, Manila

July-August, 1921, **1**, No. 4

*Leper Segregation in Philippines. J. Albert.—p. 133.
*Case of Hematopoietic Splenomegaly with Marrow Sclerosis. H. W. Wade.—p. 143.
Contracture of Neck of Bladder. Report of Eleven Cases. M. Baltazar.—p. 149.
*Hydatidiform Mole: Report of Forty Cases. F. I. Velasco.—p. 153.
Radium in Uterine Conditions. R. Fernandez.—p. 157.
Acute Dilatation of Postpartum Uterus: Report of Case. G. Rustia.—p. 160.

Leper Segregation in Philippines.—Albert calls attention to the fact that what has been published elsewhere about the results obtained in the Culion Leper Colony is not in accord with facts, and is far from the reality. Considering as a whole the number of admissions from year to year, they have remained with but slight variations at the same level. There is no evidence of any marked reduction, and therefore the 90 per cent. reduction claimed by some is in reality misinformation and a pure fantasy. Such segregation of all lepers, without any distinction between dangerous and nondangerous cases, has not responded to the hopes and expectations of its authors nor to the sacrifices extorted from the people. The continuation of the present system Albert believes can only be justified by the hysterical fear of medieval ages. The Culion experiment is not based on present knowledge of the degree of the contagiousness of the disease. The fact that an intimate and prolonged association can produce infection in only 5 per cent. of the people, and the eloquent fact that syphilis and tuberculosis, which are much more contagious, are not subjects of isolation, supply sufficient reason to condemn the present system of compulsory segregation of all lepers as being anachronic, unjustified and ultrascientific. Owing to the great difficulties in communication and transportation, the execution of the present system of centralization in one single leprosarium of all lepers of the islands is utopic and impracticable, for it requires the maintenance in the different ports and provinces of leprosaria which really become permanent. The present drastic system favors the concealment of cases, making more difficult the institution of early treatment, on which fact modern therapeutics is based. The inevitable concealment of cases with no visible lesions neutralizes and destroys all the apparent and doubtful efficacy which could be claimed in favor of such harsh measures of absolute isolation. The extraordinarily long period of incubation so peculiar of leprosy, as well as its characteristic chronicity, clearly indicate that there is a certain natural immunity against the virulence of the disease. The recognition of this immunity or organic defensive power indicates also that the first line of defense against the infection is good nourishment and proper personal hygiene. Based primarily on the failure of the Culion experiment and also on present medical knowledge as regards the transmissibility and curability of leprosy, Albert suggests the convenience of studying legislation similar to that of Norway, to take the place of present leprosy laws, which would prescribe the segregation of lepers with open lesions in appropriate hospitals whenever their isolation at home is considered by competent authorities unsatisfactory and unsafe.

Hematopoietic Splenomegaly with Marrow Sclerosis.—Wade reports a case of splenomegaly of at least two years' standing in an individual with no history of previous disease, except for a period of daily chills and fever two years ago, which symptoms it is suggested were very possibly caused by the chronic tuberculosis of the lungs found at the necropsy. Epigastric distress experienced at that time led to the discovery of the enlarged spleen. Since then there has been progressive loss of weight, also perhaps explainable by the tuberculosis, and a persistent though apparently occasionally remittent diarrhea. The patient was ambulant, afebrile, and seems to have presented himself for treatment chiefly on account of abdominal distress referable to the large spleen. The Wassermann reaction was negative. No malarial parasites were found. Blood examinations revealed little of interest except 8 per cent. large mononuclears. The spleen was removed. The patient died on the fourth day after operation. Examination of the spleen revealed very active hemopoiesis, with here and there discrete nodules of marrow-like tissue wholly foreign to splenic structure. There was complete lack of hemopoietic activity on the part of the bone marrow, much of which had undergone marked osteofibrosis. Some hemopoietic activity was found in the liver and the prevertebral lymph nodes.

Hydatidiform Mole.—The forty cases of hydatidiform mole reported by Velasco occurred in 8,187 maternity cases that entered the free obstetrical ward of the Philippine General Hospital during a period of ten years, one case of hydatidiform mole in every 204 maternity cases. The mortality in this series was only 5 per cent.

Public Health Journal, Toronto

October, 1921, **12**, No. 10

Malnutrition in School Children. C. S. MacDougall.—p. 451.
Need for Cooperation Between Hospital, Public Health Nurse and Community. J. Forshaw.—p. 455.
Progress of Venereal Disease Control in Canada. J. J. Heagerty.—p. 459.
Aims of Modern Social Work. F. N. Stapleford.—p. 464.

Rhode Island Medical Journal, Providence

November, 1921, **4**, No. 11

Endocrine Disorders and Their Relation to Individual. F. J. Parnell, Providence.—p. 141.
Some Radical Changes in Treatment of Diabetes Mellitus. F. T. Fulton, Providence.—p. 143.
Results of Treatment of Syphilis in Mental Cases. H. I. Godine, Howard.—p. 145.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Bristol Medico-Chirurgical Journal

September, 1921, **38**, No. 143

Sinus Phlebitis and Thrombosis Complicating Suppurative Middle Ear Disease. J. P. I. Harty.—p. 73.
Treatment of Empyema. J. A. Nixon.—p. 82.
*Case of Multiple Serositis (Pick's Disease) of Unusual Distribution. H. J. Orr-Ewing.—p. 90.

Multiple Serositis.—Ascites and hydrothorax of considerable degree were present in Ewing's case and no other symptoms than those caused by these fluid accumulations were manifested. All laboratory examinations were negative except on one occasion when malignant tertian rings and crescents were present in blood films. The patient admitted having had malaria two years previously. He had otherwise always been well.

British Journal of Experimental Pathology, London

October, 1921, **2**, No. 5

*Capillary Blood Pressure and Glomerular Filtration Theory. L. Hill and J. McQueen.—p. 205.
Theory of Agglutinin Estimation. J. O. W. Barratt.—p. 214.
*Preventive Effect of Influenza Vaccine. S. Yabe.—p. 223.
*Comparative Immunity Tests with Saline Vaccines and Lipovaccines. J. Pratt-Johnson.—p. 232.
*Production of Immunity in Rabbits Against an Organism of High Virulence for Species. J. Pratt-Johnson.—p. 239.
Hydrogen-Ion Range for Staphylococci. L. W. Hall and A. D. Fraser.—p. 242.

Capillary Blood Pressure and Glomerular Filtration Theory.—Hill and McQueen discuss the modern theory of the secretion of urine, and evidence is brought forward to show that pressure in the glomerular capillaries is low, and that physiologic permeation—not filtration—controls the passage of fluid through the glomeruli. Observations on the circulation in the frog's glomeruli support these conclusions, which are also borne out by experiments which demonstrate the selective action of the epithelium covering the glomeruli.

Effect of Influenza Vaccine Treatment.—By the use of the heated influenza vaccine, the morbidity of those inoculated was reduced by one half as compared with the rate of those uninoculated. When the inoculation was begun just at the commencement of the epidemic and was finished by its acme, the morbidity among the inoculated persons, as compared with that among the uninoculated, was reduced to one sixth by the use of the vaccine. The complications from catarrhal pneumonia were lessened in the case of inoculated patients to one half and deaths to one seventh. The length of fever was less among the inoculated persons in proportion to the quantity of vaccine inoculated. The reaction after the inoculation was so slight that cessation from work was unnecessary.

Saline Versus Lipovaccines.—Johnson asserts that lipovaccines stimulate the production of agglutinins to a lesser degree than saline vaccines administered in the same doses. The presence of a high titre of agglutinins does not necessarily indicate the presence of an established immunity even against small doses of a highly virulent organism.

Production of Immunity.—Experiments are described by Johnson which demonstrate the possibility of securing the immunity of rabbits against an organism of high virulence by immunization with a live related organism avirulent for the species. In this respect, Tenbroeck's observations are confirmed, and it is further shown that killed vaccines prepared either from the homologous or from a related organism fail to give solid immunity against the live virulent strain.

British Journal of Tuberculosis, London

October, 1921, **15**, No. 4

Montana as a Health Station for British Tuberculous Subjects. T. N. Kelynack.—p. 147.
*Clinical Value of Arneth's Leukocyte Count and Döhle's Inclusion Bodies in Pulmonary Tuberculosis. T. Tominaga.—p. 159.
Pneumothorax Therapy. Z. P. Fernandez.—p. 165.
Shelters for Tuberculous Patients. J. Ritchie.—p. 174.

Arneth's Leukocyte Count and Döhle's Inclusion Bodies in Tuberculosis.—Tominaga has found that Arneth's leukocyte count usually goes hand in hand with the clinical course of pulmonary tuberculosis. Döhle's inclusion bodies are also found in some tuberculous cases. They appear or disappear according to the fever. Marked dislocation of Arneth's leukocyte picture and the presence of inclusion bodies in more than 5 per cent. of all neutrophils are a help to the diagnosis and prognosis of pulmonary tuberculosis. Inclusion bodies are found in the proportion of: 64 per cent. in the leukocytes of the first class; 27 per cent. in those of the second class; 8 per cent. in those of the third class.

Glasgow Medical Journal

October, 1921, **96**, No. 4

Present Day Conditions—Social, Medical and Political—in Vienna. L. Findlay.—p. 193.
*Two Unusual Malformations of Hind End of Body. G. H. Edington.—p. 212.
*Case of Acute Pellagra in Childhood. J. B. D. Galbraith.—p. 233.

Malformations of Hind End of Body.—In one of Edington's cases there was a microscopic communication between the blind rectum and the urinary bladder; micro-urethra (stenosis) with distension and diverticulation of the bladder; abdominal ectopia testis; irregular termination of vasa deferentia; esophageotracheal communication; malformed limbs. The second case was one of extroversion of the bladder; right Müllerian duct opening on the posterior wall, as also an epidermis lined canal passing up from perineum; sacral spina bifida.

Acute Pellagra in Childhood.—Galbraith's patient was aged 3 years and 9 months, with the history that for the past month he had been "nervous," easily frightened and upset, and that for fourteen days he had complained of attacks of "drunkenness" when he had to hold on to the table to keep himself from falling. These giddy turns occurred every day, usually three or four, each lasting for about a quarter of an hour. There was no complaint of pain, no vomiting, no eye trouble, no lethargy, and no night restlessness. Previous health had always been good. Mentally he had always been bright and intelligent. The case was thought to be one of cerebellar tumor, but the clinical picture changed completely. The boy became dull and apathetic; ultimately he would not speak even to his parents. Unsteadiness of the gait eveloped; spasticity of the left side; Babinski's sign on both sides; diarrhea; marked stomatitis. The rash, the stomatitis, enteritis, vertigo, and mental symptoms suggested pellagra. The boy emaciated very rapidly, and became semicomatose. The stomatitis and diarrhea quickly progressed. The skin lesions became more brick-red in color and sunburnt looking, and were traversed by a network of very finely marked fissures. Convulsions appeared on the fifteenth day. Death occurred on the nineteenth day. The brain was markedly edematous. Careful examination failed to reveal any tumor. The choroid plexuses were normal. The spinal cord was congested and very pulpy, especially in the lower dorsal regions, where the gray matter showed degeneration (perhaps postmortem). Examination of sections of the cord revealed swelling and degeneration of many of the pyramidal cells in the anterior cornua, but nothing to suggest an acute myelitis. There was no definite evidence of tract degeneration, and the myelin sheaths appeared to be normal. The case has special interest because of the controversy regarding the etiology of the disease. The commonly accepted view is that protein deficiency in the food is the main factor in the production of pellagra. In this example the child had been given the diet of a working-class family, which presents no gross deficiency of protein.

Japan Medical World, Tokyo

Oct. 15, 1921, **1**, No. 6

*Isolation of Immune Hemagglutinin. T. Furuhata, Tokyo.—p. 1.
*Prophylactic Inoculation Against Measles. S. Hiraishi and K. Okamoto.—p. 10.
Transplantation of Rat Sarcoma in Adult Birds. Y. Shirai.—p. 15.

Isolation of Immune Hemagglutinin.—The isolation of purified hemagglutinin was affected by Furuhata from sensitized hen's blood cells by alkali in a nonelectrolyte medium. Two c.c. of hen's blood corpuscles were washed, and sensitized with 5 c.c. of twenty-five times diluted immune serum (titre equals 1:750) for half an hour at 37 C. These sensitized blood

cells were centrifuged, and washed with 10 per cent. saccharose solution. The washed sediments were emulsified in 4.5 c.c. of 10 per cent. saccharose solution and 0.5 c.c. of tenth-normal sodium hydroxid solution and were incubated at 37 C. for one hour. After centrifugation the supernatant fluids were removed as dissociated hemagglutinin, this extract being neutralized with tenth normal hydrochloric acid. The separated hemagglutinin was purified further by dialysis, by shaking with ether and by concentration in a vacuum to the required volume. The nitrogen of hemagglutinin dissociated in sugar medium was from 0.01541 to 0.03923 gm. per hundred c.c. and that separated in salt solution was from 0.1961 to 0.004724 gm., while the probable amount of nitrogen obtained by the indirect method was 0.01401 gm. per hundred c.c.

Prophylactic Inoculation Against Measles.—Hiraishi and Okamoto used blood obtained from measles patients, citrated it with a 2 per cent. solution and diluted to 100, 1,000 and 10,000 times with a 1 per cent. citrated solution. The diluted blood was used for inoculation. The inoculation was made into the intrascapular region in a quantity of from 0.5 to 1.0 c.c. of the ten-thousandth dilution for the initial inoculation. In some, a larger quantity was employed. When the blood was left standing, the corpuscles sank down, so it was well shaken up before inoculation. The blood was used as fresh as possible, but in some cases, it was kept in a dark cool place for forty-seven hours. The blood was taken from the patients between the period of the first manifestation of Koplick's spots and the height of eruption. The second inoculation was made, as a rule, three weeks after the initial one. Forty-four children were inoculated. They were all healthy with no history of measles and were selected from those who had had no contact with the patient at their own home or their vicinity. In some cases, the inoculation was made for purely prophylactic purposes during the height of the epidemic. The minimum morbid dose of the infected blood found to be between 0.001 and 0.002 c.c. A prophylactic inoculation with 0.0001 c.c. of the infected blood is entirely harmless. This prophylactic inoculation gives a certain degree of immunity to the child. It does not confer an absolute immunity against the natural infection, but it gives only a comparative resistance. Those who had the onset of the symptoms four weeks after the prophylactic inoculation had a milder course than otherwise.

Lancet, London

Nov. 5, 1921, **2**, No. 5123

Clinical Units. C. Allbutt.—p. 937.
Tuberculosis: Its Relations to General Bodily Conditions and to Other Diseases. F. P. Weber.—p. 940.
Vitamin Deficiency and Factors in Metabolism. A. Hodgson.—p. 945.
Cardiac Massage. A. G. Levy.—p. 949.
*Gastric Function Before and After Gastrojejunostomy. T. G. D. Bonar.—p. 952.
Case of Cysticercus Cellulosae in Man. J. R. Hughes.—p. 956.
Case of General Infection by Cysticercus Cellulosae. H. K. Abbott.—p. 956.
Case of Acute Tetanus, Successfully Treated with Large Doses of Antitetanic Serum. C. E. Shattock.—p. 957.

Gastric Function Before and After Gastrojejunostomy.—The result of Bonar's investigations lead him to conclude that ulcers can be grouped under three headings: (1) prepyloric, including cardiac ulcers; (2) pyloric ulcers (simple or with stenosis); (3) duodenal ulcers. Growths form a fourth group, regardless of type of operation. No matter the type of operation (e. g., gastrojejunostomy alone or together with excision of the ulcer), in prepyloric ulcers the curves obtained before and after operation differ in that the free hydrochloric acid is diminished, but the total acidity reaches roughly its previous level; bile enters the stomach during the meal, and the stomach is emptying more rapidly than before. Pyloric ulcers, after gastrojejunostomy, have the same type of curve as before operation. Duodenal ulcers have a highly acid resting juice, with a slightly diminished free hydrochloric acid, and the remaining part of the curve reaches about the same maximum as before, although it may be obtained quicker after operation. Carcinomas have a low free and total acidity both before and after gastrojejunostomy. In all cases of gastrojejunostomy the stomach is emptying quicker than before the operation. In all cases a varying amount of bile gets into the stomach during some part of the meal. In all cases when the gastrojejunostomy has been successful, pain has been relieved. In most cases of simple ulcer weight has been put on.

Sei-I-Kwai Medical Journal, Tokyo

October, 1921, **40**, No. 4

*Effects of Antipancreatic Ferment Serum on Blood Sugar and Reducing Substances in Urine of Rabbits; Application of Serum for Treatment of Human Diabetes. H. Wago.—p. 7.

Effect of Antipancreatic Ferment Serum on Blood Sugar.—Wago's work on pancreatic ferments and antibodies is well known. He reports further on the use of this antipancreatic ferment serum. The antipancreatic serum showed a favorable effect on the sugar metabolic function. When it was introduced into normal rabbits or into rabbits in which diabetes was produced by epinephrin or phloridzin a decrease of the blood sugar resulted and the reducing substance was recognized in the urine. Its degree seems to be in proportion to the serum given. The antiserum seems to strengthen the activities of the pancreatic amboceptor (or hormone). The essential factor of the diabetes was due to the upsetting of the equilibrium between the external pancreatic secretion and the pancreatic amboceptor. The antipancreatic serum showed a curative value in applying it to human diabetes.

Archives des Maladies de l'Appareil Digestif, Paris

October, 1921, **11**, No. 5

*Gastric Ulcer with Uncontrollable Vomiting. P. Le Noir, C. Richet, Jr., and A. Jacquelin.—p. 297.
*Lesions of Nerves with Gastric Cancer. M. Loeper and J. Forestier.—p. 307.
*Gases in Colon at Splenic Flexure. F. Ramond and H. Borrien.—p. 313.
*Soaps in Feces. R. Goiffon, A. Haristoy and M. Sarmento.—p. 319.
*Rapid Biloculation of Stomach. A. S. Alivisatos.—p. 330.
*Sorgho Flour Gruel in Stomach Disease. Bardou.—p. 335.

Gastric Ulcer with Uncontrollable Vomiting.—The five cases reported teach that with uncontrollable vomiting, in a case of gastric ulcer, the possibility that the liver or kidneys may be the main factor in the vomiting must always be borne in mind. The treatment should be directed to the liver or kidney or both. Venesection, diuretics, cholagogues, and an ample supply of sugar and alkalines by rectal drip and subcutaneously to ward off acidosis—even when the liver-kidney origin is not quite certain—will aid in preparing for an emergency operation. The sudden onset of the vomiting; the large amounts vomited in comparison to the fluids ingested, suggesting elimination of toxins through the ulcerated stomach mucosa as the point of lesser resistance; the fact that neither belladonna nor injection of atropin influences the vomiting, and that palpation through the vagina excludes a pregnancy—these are the presumptive signs, but the main dependence in differentiation is on tests for liver-kidney functioning. In the first two of the five cases described, the liver-kidney derangement was not recognized, and the usual operative ulcer treatment was applied. Both patients died soon after the gastro-enterostomy or jejunostomy, and the necropsy findings in the liver and kidneys amply explained the fatality. When three more cases of the kind were encountered, no operation was attempted, and the patients all recovered under medical measures alone to combat the acidosis or uremia. In one case there was acidosis and a condition akin to dyspeptic coma, finally conquered by sugar and alkaline infusion by rectum and subcutaneously. One patient was a man of 45 with stomach symptoms for fifteen years, and the acidosis and vomiting were due to acute insufficiency of the liver. Two attacks of this kind in little over a month were cured by the sugar and alkaline infusion, and the man was safely operated on a few weeks later. In the other case, uremia dominated the clinical picture.

Recurring Cardiospasm with Cancer of Stomach.—Loeper and Forestier report a case of cancer of the lesser curvature inducing recurring spasm of the cardia. The cause was evidently the neuritic lesions found in the vagus and the progressive and ascending cancerization of the fibers in the region of the cardia.

Air at Splenic Flexure of Colon.—Ramond and Borrien describe the physical, radiologic and functional signs of the

digestive, circulatory and respiratory phenomena which may develop from accumulation of air or gases of fermentation at the splenic flexure. Palpitations and tachycardia may be constant, with dyspnea on slight exertion, and there may be symptoms suggesting a partial pneumothorax. If means to correct constipation and abnormal fermentation, etc., fail, operative treatment might be considered. In Duval's case, tenacious *aérocolie* complicated with severe disturbance on the part of the heart, was cured by resection of the colon at the splenic flexure. Carnot's patient died in sudden syncope forty-eight hours after an operation of this kind, the change in the pressure on the heart having been too abrupt.

Soaps in the Bowel.—The extensive research on dogs, pigs and man described apparently demonstrated that moderate fermentations in the bowel do not promote the demineralization of the organism. On the contrary, they tend to check the losses of calcium and magnesium in the stools.

Hour-Glass Stomach of Ulcer Origin.—The mediogastric stenosis was notable by its rapid development when the ulcer became installed.

A Tunis Gruel.—Bardou refers to a gruel made with sorgho flour, and extols it for stomach disturbances. Its use is traditional for the purpose among the natives of Tunis.

Bulletins de la Société Médicale des Hôpitaux, Paris

Oct. 14, 1921, **45**, No. 28

*Tuberculosis with Liver Disease. N. Fiessinger and P. Brodin.—p. 1314.
*Unsuspected Otitis in Infants. M. Renaud.—p. 1326.

Acute Tuberculosis with Alcoholic Liver Disease.—The liver seems to be an important element in the fight against the tubercle bacillus, and when it is suffering from the action of alcohol, tuberculosis is liable to become installed. Five cases are described in detail in women between 30 and 50 with alcoholic hepatitis. The disease in all began with rapid emaciation. Then came signs of mild liver disease, ascites or subjaundice, and in from four months to a year symptoms of severe insufficiency of the liver became manifest, and this rapidly progressed to a fatal termination. Necropsy revealed tuberculous processes in peritoneum, lungs or kidneys. In 20 other women addicted to alcohol 5 presented polyneuritis, or other nervous affection, and only one in this group was tuberculous, while 8 were tuberculous in the 15 with liver disease.

Otitis in Infants.—Renaud found a suppurative process in the petrous bone around the internal ear in each of 70 infants dying in August and September at the Bretonneau Hospital. This osteomyelitis accompanied visceral toxic-infectious symptoms, but he assumes that the otitis was the primary process. In 30 the otitis had been recognized during life; in the others it was a necropsy surprise. Both ears were affected in 20 per cent. The diagnosis of gastro-enteritis was not confirmed at necropsy in any instance, and neither inherited taints nor tuberculosis could be incriminated for the fatal outcome. He was so impressed with the constancy and importance of insidious otitis in infants that he now makes a point of treating for otitis as a routine procedure. In the discussion that followed, Menetrier stated that milk may get into the eustachian tubes as they are relatively shorter and wider in infants. To prevent this he has the infant held sitting up while feeding. Comby cited a number of reports of mastoiditis in infants without signs of otitis, 77 per cent. in Steinsleger's 9 cases and 21 per cent. in Salamo's 150; 90 and 91 per cent. in others' statistics. Barbillion found suppuration in both ears in 25 of 27 infants supposed to be typical examples of athrepsia, the otitis utterly unsuspected. The latent otitis may occur with gastro-intestinal, bronchitic, meningitic, septicemic or a mastoid clinical picture. Tixier remarked that an infant entering a general ward of a hospital is practically doomed to parasitism. Martin urged individual isolation of all such children. By warding off infection, the otitis will not develop.

Paris Médical

Oct. 8, 1921, **11**, No. 41

*Abdominal Arteriosclerosis. F. Fernández Martinez.—p. 285.
*Proposed Orientation of Surgical Science. G. L. Regard.—p. 292.
Coxa Valga. L. Dieulafé.—p. 295.

Abdominal Arteriosclerosis.—A similar article by Fernández Martinez was summarized May 14, 1921, p. 1375. He remarks that the prognosis of abdominal arteriosclerosis is as unsatisfactory as the treatment is ineffectual. Very few instances of recovery are known. The treatment of abdominal aortitis is that of arteriosclerosis in general: repose, small, easily digested meals, cautious massage of the abdomen, carbonated baths and the high frequency current. The same applies to abdominal arteriosclerosis, with, in addition, iodin and iodids in small doses, salicylate, theobromin, bromid and valerian, laudanum and hot applications to the abdomen; on suspicion of syphilis, specific treatment. The acute attacks require morphin, ice, liquid paraffin—especially if there is much intestinal spasm—plus amyl nitrite and other drugs to reduce blood pressure. The obliteration of the vessel can be treated only surgically, hastening to resect the engorged zone or make an artificial anus. By bearing in mind the possibility of occlusion of mesenteric arteries in the course of arteriosclerosis, we may solve many diagnostic mysteries.

Surgiology and Survival of Bone Grafts.—Regard laments that the question of the survival of bone transplants is still unsolved after all these years because no one has studied the question from the physiologic standpoint. For solving such questions, he declares, a new branch of science should be founded, which he calls surgiology, *chirurgiologie*. The surgiologist should devote himself to research on physiology as connected with surgery and experimental surgery, working in close collaboration with the surgeon, both seeking for useful discoveries, the one pure science, the other the practical application of it. Many surgiologists have worked along this line, but only haphazard, and turning to other lines just when their experience and skill were ready to bear fruit. The surgeon should welcome the surgiologist to his wards, and the hospitals should make a place for the surgiologist, and supply a laboratory, and the university an institute of surgiology and a professorship, like that of the professor of experimental and comparative pathology.

Oct. 15, 1921, **11**, No. 42

*Structure of the Cell. A. Policard.—p. 297.
*Arsenical Conjunctivitis. Milian.—p. 303.
Thrombophlebitis of Sinus Cavernosus. Lauret.—p. 305.

The Structure of the Cell.—Policard says there is no need for discouragement because we have had to discard so much of what was supposed fully established in cytology twenty years ago. Very little is left of all the research on the morphology of the cell. From a morphologic science, cytology is becoming a physiologic and chemical science, as he explains.

Arsenical Conjunctivitis.—Milian called attention nearly ten years ago to congestion of the conjunctivae as a premonitory sign of poisoning from atoxyl, warning of impending blindness. He now generalizes this warning, saying that it applies to all arsenicals. The arsenic induces a paralytic vasodilatation. This may be the first and long the only symptom from the arsenic poisoning, but this arsenical conjunctivitis warns of danger and calls for longer postponing of the next injection of the arsenical. A little epinephrin morning and evening may be useful, but the main indication is to ward off microbian infection of the eyes while this paralytic vasodilatation lasts.

Presse Médicale, Paris

Oct. 22, 1921, **29**, No. 85

*Gastrohepatic Syphiloma. A. Florand and A. L. Girault.—p. 841.
Action of Bourboule Mineral Waters on Nutrition. J. Aloy and P. Bru.—p. 842.
*Hydatid Cysts in the Lungs. Blanco Acevedo.—p. 843.
*Intracardiac Injections. L. Cheinisse.—p. 845.

Stomach-Liver Syphiloma.—Florand and Girault diagnosed the syphilitic nature of the stomach disturbances from their persistence for three years, the good appetite, and absence of tenderness, and the fact that the large tumor disclosed by roentgenoscopy would have been more debilitating if malignant. Another instructive feature was the tolerance for potassium iodid; the stomach objects to this drug in all but syphilitic disease. The fear that sclerosis was probably installed led to a laparotomy, but, to the surprise of all, the liver was found involved in the tumor and resection was out

of the question. After gastro-enterostomy, mercurial treatment was continued, and in little more than a month no trace of the tumor could be palpated.

Hydatid Cyst of the Lung.—Acevedo expatiates on the advantages of Lamas' method of inducing adhesions between the parietal and the visceral pleura as the first step in the operation. Ten days later the cyst is safely evacuated. The method was described in detail in these columns **77**:408, 1921. He has applied this technic in twelve cases during the past year. With a cyst in the hilus of the lung, if small, it could be compressed by an artificial pneumothorax which might cause it to break into the air passages and be evacuated by a vomica.

Intracardiac Injections.—Cheinisse reviews sixteen communications reporting injection directly into the heart as the last resort for resuscitation. Of the fifteen cases with durable results compiled by Vogt, epinephrin had been used in nine. Camphor, caffein and digitalis do not act quickly enough. The dose of epinephrin was 1 c.c. of the 1:1,000 solution. Nearly all of these communications were reviewed in THE JOURNAL as published.

Progrès Médical, Paris

Aug. 13, 1921, **36**, No. 33

*Sacralization of Lumbar Vertebra. A. Aimes and L. Jagues.—p. 380.
*Torsion of the Pedicle of a Tumor. Delbet.—p. 380.
*Coxalgia. Delbet.—p. 380.
Acute Hyperthymia Without Delirium. R. Benon.—p. 382.
Recent Progress in Respiratory Gymnastics. G. Rosenthal.—p. 383.
Medicine in Brillat-Savarin's Work. M. Genty.—p. 386.

Malformation of Fifth Lumbar Vertebra.—Aimes and Jagues now have a record of thirty-eight cases in which persisting pain in the lumbar-sacral-iliac region might be explained by the "sacralization" of the fifth lumbar vertebra. By this they mean an exaggerated development of the transverse processes of this vertebra until they look more like parts of the sacrum. In only 39 per cent. of the total sixty-three cases of chronic lumbar and sacral pain in young persons, the roentgen findings were negative. They are now investigating whether this sacralization of this vertebra is common in persons free from painful disturbance. In one case in which the pains had been treated on the assumption of appendicitis and then of coxalgia, without relief, injection of procain into a lumbar sacral foramen arrested the pains completely for the time being, which threw light on their origin.

Torsion of Pedicle of Ovarian Cyst.—Delbet insists that the discovery of an ovarian cyst in the pregnant calls for a laparotomy without delay, at least during the first three months, on account of the danger of torsion of the pedicle. Torsion is most liable during the first three months and the last two weeks of the pregnancy. After the third month is past, he advises to wait until term, and then to resect the cyst before or at the onset of labor. Torsion of the pedicle of any tumor calls for immediate intervention.

Sacrocoxalgia.—Delbet has encountered three cases in which lameness was the predominant symptom from chronic appendicitis. The limping was cured at once by appendicectomy which arrested the contracture of the psoas. He adds that in most of the operative cases of hip-joint disease the patients had been treated beforehand for sciatica, sometimes for years, without benefit. Actual sciatica can be easily differentiated, he says, by the tender points along the course of the nerve. For actual sacrocoxitis, operative treatment is indispensable.

Schweizerische medizinische Wochenschrift, Basel

Sept. 29, 1921, **51**, No. 39

*Nine Years of Pneumothorax Treatment. Von Niederhäusern.—p. 889.
Cystic Changes in Lacrimal Gland. J. Strebel.—p. 895.
*Kidney Disease in the Pregnant. P. Hüssy.—p. 899. Conc'n.

Artificial Pneumothorax.—This communication reports the present status of the first 200 patients treated with induced pneumothorax at the Berne sanatorium over ten years ago. Over 21 per cent. have full earning capacity at present. The patients were mostly between 20 and 30, and men seemed decidedly more resistant to the pneumothorax treatment than women. Complete success was realized in 42 per cent. of the men and only in 22.5 per cent. of the women in the more promising groups of cases. Analysis of the 200 cases shows that the best results can be counted on in the chronic unilateral cases with a tendency to fibrosis. But even in the more acute cases, with tendency to cheesy degeneration, the prospects are good if the general constitution is fairly strong. Women with the pneumothorax should avoid becoming pregnant.

Kidney Disease in the Pregnant.—Hüssy here concludes his long study of this subject. In this instalment he discusses pyelitis and renal tuberculosis. He says of pregnancy hemoglobinuria that it is probably part of the general pregnancy intoxication picture. It accompanied eclampsia in 35 per cent. of the cases, and has been observed with acute yellow atrophy of the liver. In Brauer's case the hemoglobinuria returned at two following pregnancies, and was accompanied with jaundice and swelling of liver and spleen. In Meinhold's case the hemoglobinuria was the only symptom. Hematuria with pyelitis is always suspicious of tuberculosis. Nephrectomy during a pregnancy is usually borne without harm; gestation proceeds unmolested. The pregnancy intoxication may cause vascular disturbance with resulting epithelial degeneration in the kidneys, but the whole subsides when the toxic element ceases to act. This nephropathy is special to pregnancy, and corresponds to the albuminuric kidney. The prognosis depends on the promptness with which it is diagnosed. Hufmeier found eclampsia in 104 of 137 cases of pregnancy albuminuria, with a mortality of 40 per cent. Treatment aims to ward off eclampsia, and as long as there are no premonitory signs of this, temporizing is justified. Hüssy's article is in German. It was read to open the discussion at the recent annual meeting of the gynecologists of switzerland.

Policlinico, Rome

Oct. 1, 1921, **28**, Medical Section No. 10

*Progressive Myasthenia Gravis. L. D'Amato.—p. 413.
*Diabetes Insipidus and the Pituitary. L. Villa.—p. 438.
*Permanganate Test for Albumin in Spinal Fluid. P. Boveri.—p. 450.

Case of Myasthenia Gravis.—D'Amato compares with a case described in a young man what has been written on Erb-Goldflam's disease. The first symptoms in his case followed after a severe chilling, two weeks after recovery from an infectious sore throat. The symptoms improved so much later that the earning capacity has been restored for two years to date. The only treatment had been a course of epinephrin, in the hospital, when a tendency to improvement was already manifest.

Relations Between the Pituitary and Diabetes Insipidus.—In Villa's case, severe diarrhea from chronic enteritis accompanied the diabetes insipidus, and the man of 26 died from debility. The abnormal condition of the pituitary explained the diabetes insipidus. Chronic enteritis with diarrhea is not uncommon with diabetes insipidus. He cites several cases of this association, and is inclined to accept a causal connection.

Permanganate Test of the Cerebrospinal Fluid.—Boveri detects any increase in the albumin content of this fluid by the oxidation of potassium permanganate when there are protein substances present. When this occurs, the tint veers to canary yellow. Among those who have extolled the simplicity and dependability of this test are Rebizzi who found it useful in differentiating true from false tumors in the brain, and Bardisian who was able to exclude meningitis by the negative findings in four cases, corroborated by the course. To 1 c.c. of the cerebrospinal fluid is slowly added, pouring it along the wall of the test tube, 1 c.c. of a 1:10,000 solution of potassium permanganate. The tube is then held vertical, and there is no change in tint if the fluid is normal. If not, the zone of contact turns yellow. By jarring the tube a little the entire fluid turns yellow. The reaction is pronounced when the tint changes in less than two minutes; moderate, in three or four, and weak, if the tint does not veer to yellow until after five to seven minutes. In several hundred applications of this test he has found it a constant index of abnormal protein content, sometimes preceding lymphocytosis although in children the latter usually appears first.

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Riforma Medica, Naples

Sept. 24, 1921, **37**, No. 39

*Action of Digestive Ferments on Tuberculin. D. Franceschelli.—p. 914.
*Extragenital Syphilitic Chancres. O. Cignozzi.—p. 919.
*Syringomyelia. G. B. Girotti.—p. 922.
*Physiology of the Tonsils. C. B. Farmachidis.—p. 923.
Pathologic Constitutions in Relation to Surgery. Aievoli.—p. 925.

Action of Digestive Ferments on Tuberculin.—Franceschelli relates that the different digestive ferments added to tuberculin in the test tube destroyed it so that the tuberculin mixture was entirely inert when injected into animals. Similar research on the tubercle bacillus confirmed that the digestive ferments have no action on the wax of the tubercle bacilli.

Extragenital Syphilitic Primary Chancres.—In the five cases described, the lip, tonsil or cheek was the seat of the chancre, and diagnosis had been puzzling. In four of the cases the suggestion of possible syphilis seemed preposterous.

Syringomyelia.—In Girotti's case the syringomyelia had been developing in a mild form for two years in the man of 34 when a trauma affecting the cervical spine caused extreme and persisting aggravation.

Physiology of the Tonsils.—Farmachidis cites some recent research which apparently confirms his statements in 1914, based on experimental and clinical experiences, to the effect that the tonsils form part of the endocrine system, and especially of the group that preside over the metabolism of sugar.

Revista Clínica, Medellín, Colombia

August, 1921, **2**, No. 18

*Artificial Deformation of the Skull. Montoya y Florez.—p. 247.
Malaria in Children. J. B. Londoño.—p. 264.
Physiology of Digestion. M. M. Calle.—p. 267
*Strangulated Umbilical Hernia. A. Castro.—p. 272.
Surgical Treatment for Gastric and Duodenal Ulcers. A. Echeverri Marulanda.—p. 283.

Artificial Deformation of the Skull.—Montoya describes the case of an Indian woman who required trephining on account of a suppurating skull wound. She and her five brothers all presented a peculiar artificial steeple-shaped deformation of the skull. He says that this deformation of the children's skulls is known to have been a tribal custom for 400 years among the Indians of western South America, the ancestors of this woman. Artificial deformation of the skull has been found in the relics of the neolithic and bronze age in Europe and Asia as well as in America, and the practice still persists in Oceania. Artificially deformed skulls are such a common finding in Peru that some think the acquired deformity had become the normal shape, as even fetuses had the same deformity of the skull, either forced up tall or flattened out broad. The deformation did not seem to modify the capacity of the skull, but the skull seldom grew symmetrical. Of the 506 Peruvian skulls in the Paris Museum, there are only sixty that are not deformed. The Spanish viceroys and clergy combated the practice. In Colombia the deformation served as a mark of distinction to differentiate the conquering Caribbean tribes of Indians. It was thus the symbol of valor and caste. The large number of child skeletons found suggests that the practice made many victims. The woman in the case reported is of a low mental type, if not actually imbecile. She does not know whether any artificial means had been applied to herself and her brothers. Four illustrations accompany Montoya's long historical sketch of the subject. One portrays a statue representing a man with a band tied tight around his head, in one hand the chisel with which trephining was done. The band may have been for hemostasis. Anesthesia was realized with alcohol plus a narcotic drug.

Strangulated Umbilical Hernia.—Castro warns that a strangulated umbilical hernia does not induce the stormy symptoms of strangulation of other hernias. In a case described, persistent vomiting and slight meteorism were the only signs. There was no pain anywhere, no fever; the pulse was normal, and flatus was passed. The umbilical hernia was not tender, and was easily reduced. The vomiting continued and became fecaloid, but with no other symptoms. It took two hours to release the hernial sac from its adhesions and restore approximately normal conditions. The danger in such cases is from the delay in diagnosing.

Semana Médica, Buenos Aires

Sept. 29, 1921, **28**, No. 39

*Cineplastic Amputations. G. Bosch Arana.—p. 403.
Hypertrophy of the Pylorus in Infants. J. Bacigalupo.—p. 430.
Occlusion of Pylorus by Bands. O. L. Bottaro and A. J. Pavlovsky.—p. 432
*Proteintherapy for Corneal Ulcer. G. Sirlin.—p. 434.
Rupture of Tympanic Membrane from Inflation of Tubes with Air. J. Weiss.—p. 435.
Age for Military Service. C. Trejo.—p. 436.
*Tender Point in Diagnosis of Malaria. R. Pagniello.—p. 437.

Cineplastic Amputation.—Bosch Arana has been a pioneer in this line of adapting the stump for volitional control of the prosthesis. He here reviews the various technics in vogue, and his own experience with his special method, giving twenty-one large illustrations in addition to five moving picture films showing the amputated at work with their artificial hands functioning by means of the muscles in the stump. He describes further the ergograph he has devised to test the muscular power available, and discusses the principles for the prostheses. (His technic was summarized Oct. 30, 1920, p. 1235.)

Proteintherapy for Corneal Ulcer.—Sirlin adds another case to the list of those in which a prompt and permanent cure of a corneal ulcer with hypopyon and iritis, followed after three intragluteal injections of 10 c.c. of milk, boiled for four minutes.

Tender Point in Diagnosis of Malaria.—Pagniello calls attention to the diagnostic value of a tender point in the ninth left interspace, between the middle and the posterior axillary lines, in detection of malaria. His previous communication on this subject was summarized in THE JOURNAL, Nov. 20, 1920, p. 1458, when published elsewhere.

Siglo Médico, Madrid

July 30, 1921, **68**, No. 3529

*Sequester in Mastoid. J. M. Barajas y de Vilches.—p. 717.
*Ocular Manifestations of Diabetes Insipidus. M. Marin Amat.—p. 720.
*History of Medicine in Spain. N. Mariscal.—p. 723. Conc'n.—p. 747.
The Antimalaria Campaign in Spain. G. Pittaluga.—p. 727.

Sequester in Mastoid.—For twenty days the man of 35 had been having agonizing headache and vertigo so severe he could not stand alone. There had been otitis some years before, and this had flared up anew as these symptoms developed. The mastoid operation revealed that the entire roof of the aditus and of the mastoid was movable, forming a large sequester from the bony layer between the tympanum and the cranial cavity to the bony roof of the antrum. Barajas broke up this sequester and removed the fragments, leaving the meningeal surface exposed. It seemed normal, and he sutured the parts after resecting to make an opening into the auditory canal to drain the mastoid. The outcome was perfect.

Ocular Manifestations in Diabetes Insipidus.—Marin Amat relates that under pituitary treatment in a case of diabetes insipidus described, in a man of 29, the symptoms indicating pressure on the optic chiasm displayed marked improvement. These symptoms had always been mitigated by reclining and aggravated by standing. The urine output dropped from 8 to 4 liters, but the atrophy of the optic nerves persisted unmodified. He enumerates a long list of functional, somatic and organic symptoms liable to be observed with pituitary lesions.

History of Medicine in Spain.—A portrait of the body physician of Philip II, Luis Mercado, is reproduced, and his work reviewed.

Archiv für Gynaekologie, Berlin

1921, **114**, No. 3

*Operative Treatment of Incontinence in Women. II. W. Rübsamen.—p. 441.
Substitutes for Ergot. F. Jaeger.—p. 467.
*Ligation of Vein in Puerperal Pyemia. R. Birnbaum.—p. 535.
*Spread of Parametritis. O. Walter.—p. 557.
Colloid Tumor of the Ovary. V. Kafka.—p. 587.
Diagnosis of Salpingitis. M. Rosenberger.—p. 601.
Congenital Diaphragmatic Hernia. C. Hofer.—p. 620.

Operative Treatment of Incontinence of Urine in Women.—Rübsamen has previously reported 3 cases cured by a plastic operation on the levator ani muscles or the pyramidalis. Stoeckel has recently reported 12 cases with cures

in all. Rübsamen here adds 4 more to the list of those cured by a modification of the plastic pyramidalis-fascia technic, and 4 by the levator ani method. One patient, with loss of the entire neck of the bladder, was cured of incontinence by an adaptation of the Wertheim method of interposition of the uterus. Another was cured by Rübsamen's special method of suturing the cervix in the cleft between the levator ani muscles. These last 2 patients had obstetric fistulas. This method seems preferable when there is liable to be a pregnancy later. The variety of methods in his total of 14 cases shows that the technic has to be adapted to the individual conditions. The outcome was excellent in practically all.

Ligation of Veins with Puerperal Pyemia.—Birnbaum reports a case of puerperal pyemia in which the woman of 31 recovered after ligation of the inferior vena cava. The pyemia had followed an abortion at the second month, and by the eleventh week the pyosalpinx and thrombophlebitis of the left pelvic veins were growing graver. There were one or two chills daily at times, but the heart, lungs and kidneys were apparently sound. The inferior vena cava was ligated about 5 cm. (2 inches) above the bifurcation. No cyanosis followed, but the pulse ran up to 170 through this and part of the next day, but it then returned to normal. There were no further chills after the ligation, and except for an abscess in the abdominal wall and slight cystitis, recovery progressed smoothly. He compares with this case similar ones on record, his conclusion being that ligation of the diseased veins, well above the pathologic portion, offers a prospect for saving the patient with pyemia, although he is not very optimistic.

Parametritic Exudates.—Walter warns that when the thigh is drawn up on the side of a focus of parametritis, and there are no signs of hip-joint disease, there is reason to assume that the inflammation in the connective tissue has spread to involve the psoas muscle. There is danger that the inflammation may extend downward to the inguinal canal and upward to the kidneys. This flexion of the thigh is an instructive sign of conditions which can usually be easily cured by appropriate measures but, if neglected, the gravest consequences may ensue. The details of five cases reported confirm these views. In one, the psoitis was the first sign of trouble, the parametritis having caused no appreciable symptoms.

Deutsche medizinische Wochenschrift, Berlin

Sept. 15, 1921, **47**, No. 37

Biologic Phenomena of Flocculation Process in the Serologic Demonstration of Syphilis. H. Sachs and H. Sahlmann.—p. 1083.
*Gallstones and Surgery of Bile Ducts. H. Riese.—p. 1086.
Gallstones from Practitioner's Standpoint. M. Friedemann.—p. 1088.
Prethoracic Esophagoplasty on Boy of Three. R. Hinz.—p. 1089.
Traumatic Pulsating Exophthalmos. H. Riese.—p. 1090.
Tuberculosis of the Stomach. P. Biernath.—p. 1091.
Chemical Composition of Flakes in the Sachs-Georgi Test. M. Klostermann and W. Weisbach.—p. 1092.
Estimating Disability Pension for War Neurotics. Weber.—p. 1094.
Isolated Trochlear Paralysis in Early Neurosyphilis. Nyáry.—p. 1095.
Parasyphilis or Plaut-Vincent Angina. R. Spiegelberg.—p. 1096.
Parasyphilis and Oral Spirochetosis. W. Wolffheim.—p. 1096.
Amyostatic Syndrome After Epidemic Encephalitis. Freyschlag.—p. 1097.
Foreign Bodies in the Cecum. P. Rosenstein.—p. 1099.

Gallstones and Surgery of the Bile Ducts.—Riese reports his experience in several hundred cases of cholecystectomy, and states that the results with simple drainage were better than with tamponing. The healing process was more rapid and the after-treatment was simpler and less painful. While he admits that it may not be possible to dispense with tamponing in certain cases, he recommends that it should be restricted as far as possible.

Jahrbuch für Kinderheilkunde, Berlin

1921, **96**, No. 1-2

*Influence of Lactose on Peristalsis. H. Rasor.—p. 1.
*Pathogenesis of Tetany. E. Freudenberg and P. György.—p. 5.
*Active Immunization Against Diphtheria. H. Opitz.—p. 19.
*Butter-Flour Mixture in Infant Feeding. E. Krasemann.—p. 30.
Pseudocurvature of Fetal Legs. O. Zschocke.—p. 32.
*The Muscles in the New-Born. F. Thoenes.—p. 37.
*Fermentation in the Intestines. E. Freudenberg and O. Heller.—p. 49.
*Congenital Bromodermia. J. Langer.—p. 59.
*Parkinsonism in Children After Encephalitis. J. Langer.—p. 62.
*Gallstones in Young Children. E. Freundlich.—p. 72.
*Children of Elderly Parents. A. Peiper.—p. 81.
*Action of Elements of Thrush Fungus. E. Thomas.—p. 95.

Influence of Lactose on Peristalsis.—Rasor examined with the roentgen rays eight infants after they had ingested a suspension of 40 gm. barium sulphate in 100 gm. water to which had been added 100 gm. of glucose or lactose. The lactose displayed a specific stimulating action on the movements of the small intestine.

Calcium in Pathogenesis of Tetany.—Freudenberg and György conclude from the research reported that not only the excitability is determined by the influencing and the binding of the calcium in blood and tissues, but also the water metabolism. This links up calcium with edema and diuresis, and illustrates further the extremely complex nature of the laws regulating the binding of calcium in the organism. They found among other laws that certain substances such as amino-acids, peptids, methyl amin, guanidin, creatin, urea and ammonium salts check calcium binding by the colloids. Not the total calcium content in the blood, tissues or excreta, but the free calcium ions are the decisive elements for the study of tetany, as they explain.

Active Immunization Against Diphtheria.—Opitz describes experiments on nine children between 3½ and 14 and one man of 31 injected with a balanced toxin-antitoxin mixture or with pure diphtheria bouillon. Among the facts thus learned is that fivefold overneutralized toxin-antitoxin mixtures—which, in experiments on animals, display no toxoid or toxon action—induce active immunization in man the same as a pure toxin solution. Hence it is evident that any small excess of toxin is not the immunizing factor, but that the toxin is released in the human body from its combination with the antitoxin. The toxin-antitoxin binding is thus a reversible process.

Butter Flour Mixture in Infant Feeding.—Krasemann found that the alkalinity of the blood regularly declined when infants were given butter with their ordinary food. This did not occur with the Czerny-Kleinschmidt butter-flour mixture, and he succeeded in demonsrating that this is due to the cooking of the butter. Butter browned in the pan, added to the ordinary food, left the alkalinity unmodified.

The Muscles in the New-Born.—Thoenes reports the findings in 16 new-born infants, all syphilitic but 6. The frozen sections showed degeneration of the muscle parenchyma in 3 cases; deposits of fat in the skeletal muscles in 3 and in the diaphragm in 4. In some cases there were trails of connective tissue through the muscle, and young granulation tissue in some. In 5 cases there was small-cell infiltration of the finer ramifications of the nerves while the larger nerves seemed to be intact.

Intestinal Fermentation.—In this third communication on the subject, the influence of different kinds of sugar, of fat and of the concentration of the food on intestinal fermentation is discussed. Estimation of the p_H values in the stool is an instructive means to determine the influence of these and other various factors on the fermentation. The concentration of the food does not seem to influence it.

Congenital Bromoderma.—The new-born infant had nineteen ulcerating spots on scalp and body which were at first ascribed to furunculosis. Their resemblance to a recent case of a bromid eruption corrected the diagnosis to congenital bromoderma. It was then learned that the mother was an epileptic, and had been taking bromid more or less regularly before and during the pregnancy. A month before delivery she had had another course, taking 3 gm. of sodium bromid daily for six days. Langer has been unable to find any other case of congenital bromodermia on record. The eruption in this case subsided in two weeks under local measures, and the child had begun to thrive when an intercurrent pneumonia proved fatal.

Parkinsonian Symptoms After Epidemic Encephalitis.—Three cases in children are described, sequels to epidemic encephalitis. Changes in the vessels, hemorrhages, destruction of nervous tissue and calcification are evidently cooperating factors in the clinical pictures observed. The parkinsonism developed a few weeks after the encephalitis, and rapidly reached its height, and has persisted unmodified by all measures during the more than a year to date.

Gallstones in Children.—Freundlich has found references in the literature to only thirty-one cases of gallstones in children, and extremely few were of the infectious type. He describes a case of the latter type in a young infant. The gallbladder was normal but the common bile duct was severely inflamed and contained a conglomerate of bile salts, blocking it completely and reaching up into the cystic duct. The concretion was crumbly in consistency, but the pressure had torn the duct wall. The prematurely delivered child had been changed to cow's milk when it was only a few weeks old, and the resulting enteritis had spread to involve the common bile duct.

The Children of Elderly Parents.—Peiper reviews what has been written on this subject, citing among other statistics Vaerting's compilation of 75 unusually talented Germans of the last two centuries. The age of the fathers seldom surpassed 43 while the mothers were usually over 24. He urged women not to bear any children until they were over 23. Peiper investigated the conditions in 71 families in which the combined ages of the parents were from 80 to over 100. The children were all patients at the Charité Hospital and hence the findings cannot be compared with similar groups of normal children. The 71 children included 6 with mongolian idiocy, 1 with myxedema, 11 with brain disturbance of different kinds, 2 with spasmophilia, 2 with mongolian slant to the eyes but normally intelligent, 2 with convergent strabismus and 1 with very backward development—a total of 25 with some physical or mental inferiority. Of the 4 children with mothers under 37 and fathers from 58 to 62 years old, one had strabismus and abnormal palate; one torticollis and a hemangioma; one nutritional derangement, and the fourth an infection. The proportion of substandard children increased decidedly with the increasing age of the parents. The central nervous system of the children of elderly parents and of alcoholic parents seems especially vulnerable.

Vaccine Against Thrush.—Thomas reports experiences with attempts to induce immunity to thrush and cure it with extracts of different elements of the thrush fungus.

Mitteil. a. d. Grenzgeb. d. Med. u. Chir. Jena

1921, 34, No. 1

*Severe Disturbances Induced by Ascarids. Schloessmann.—p. 1.
Bacteriology of the Biliary Passages. A. Wagner.—p. 41.
*Ulcer and Aerophagia. H. Full and L. v. Friedrich.—p. 53.
*Cerebral Paralysis in Children. K. Wachendorf.—p. 64.
*Potassium Iodid Test for the Kidneys. A. Narath.—p. 90.
*Pancreatitis. F. Schoening.—p. 101.
*Invagination of the Intestine. W. Goldschmidt.—p. 112.
Change of Shape of Bladder with Open Hernial Passage. M. Sgalitzer. —p. 132.
The Occult Blood with Ulcer and Cancer. I. Boas.—p. 138.

Severe Disturbances from Ascarids.—Schloessmann was surprised to find in operations on the biliary apparatus that ascarids were responsible for the disturbances in 5 recent cases. A single helminth was found in a bile duct in 3 of the cases, and in the others 3 and 14 were removed from the common bile duct. The patients in this group were women between 40 and 60, with old inflammatory processes and the bile ducts gaping. The invading helminth sets up new inflammation. In 5 children the helminths had invaded the appendix. In another group of cases an agglomeration of helminths had obstructed the bowel and in some had induced torsion; in others, spastic ileus. The bowel contracts under the irritation from the mass of ascarids, and this bowel cramp is a typical and regular symptom of ileus from ascarids. Incomplete ileus is generally traceable to this cause. The contrast suspension usually passes through the agglomeration of helminths without difficulty. His experience demonstrates that vigorous vermifuge treatment, concluding with 0.05 santonin three times a day for six days, did not break up the agglomeration nor kill the ascarids. The only results were abdominal cramps and nausea. Nine days later the helminths were removed by operation and all were alive. In one case 489 ascarids were found, but in the 30 cases of which he gives the details here the number ranged from 1 to 148. He never found any evidence of lesions in the bowel wall for which they could be considered responsible, but toxic action was manifest in 3 cases, and it proved speedily fatal in 2 of them, one a child of 2 and the other a woman of 38. Fluctuations of the temperature, without other known cause, may be the only manifestation of the helminthiasis, or fever may develop for the first time under treatment with a vermifuge. It is possible that the helminths become more toxic during their breeding period.

Ulcer and Aerophagia.—A case is described in a man of 49 who began to have pain in the back in 1914, below the left scapula, independent of the meals. The pains returned nearly daily, and occasionally pains were felt near the left nipple. He vomited frequently and experienced relief therefrom. He was treated in the hospital for an assumed ulcer but this diagnosis was changed to neurosis, and there was some improvement under atropin. The periods of pains returned again and again through his military service and the man begged for operative relief. The laparotomy after six years of these disturbances explained the case as an old small ulcer with secondary aerophagia. In a second case the pneumatosis and aerophagia were likewise secondary to organic disease. The eructations were so frequent and profuse that a nervous disturbance without organic basis had been surmised. The organic lesion may have induced abnormal conditions in the innervation which entailed passive introduction of air.

Cerebral Paralysis in Children.—Wachendorf discusses the epileptiform and choreiform movements which he has noted in cerebral paralysis in children. He operated in 3 such cases in boys of 10 or 12. One died a week later in status epilepticus, without regaining consciousness after the trephining. The others were very much improved by it. In these the paralysis had been noted from birth; in one, birth trauma was evidently responsible. In 16 of Gowers' 26 cases the children were the first born; in 6 others the head had been born last, and in 3 of the other 4, the previous deliveries had been difficult, the children being stillborn or paralyzed. Wachendorf reviews the literature and discusses the theories advanced. The chances of improvement from operative measures are slight. In the traumatic cases, trephining usually comes too late to prevent irreparable injury. But if epilepsy develops from the traumatic cerebral paralysis, it should be treated on the same principles as traumatic epilepsy in general. Tilmann has compiled cases showing 18 per cent. cured in jacksonian and traumatic epilepsy, and one patient with genuine epilepsy has been cured for a year to date since the focus of softening in the left temporal lobe was drained.

Potassium Iodid Test of Kidney Function.—Narath gave 0.5 gm. potassium iodid by the mouth to 124 healthy persons after drinking 400 or 500 c.c. of water, and he determined the interval before it appeared in the urine. He drew the urine through a catheter every two or three minutes. In 100 healthy men between 18 and 48, 0.1 gm. was injected intravenously. The iodin reaction was generally positive in the urine in three or four minutes, never later than eight, and the whole amount was eliminated between the fourteenth and twenty-second hours. In 24 cases the test was made quantitative. The findings related form a basis for application of this test in pathologic conditions.

Pancreatitis.—Ten cases of pancreatitis are described, including some acute cases with a mild course and others with a chronic course which suddenly turned to malignant, but terminated in recovery. In some of the cases the operative findings and course seemed to be simple inflammation, but in a year or two it proved to be cancer. In the cases described, the digestion of meat or fat seemed to be deranged less than that of carbohydrates.

Intussusception.—In Goldschmidt's 20 operative cases, 5 per cent. terminated fatally. The list includes 7 adults with recovery of only 3. Spasmophilia was evidently a factor in some of the cases. Early diagnosis and rapid intervention are indispensable.

Wiener klinische Wochenschrift, Vienna

Sept. 1, 1921, 34, No. 35

*Prognosis of Pleuritis in Children. E. Nobel.—p. 423.
Pathology and Therapy of Peritonitis. W. Latzko.—p. 424.
Theory of the Meinicke Test. R. Bauer and W. Nyiri.—p. 427.
Medical Certificate for Marriage. E. Fried.—p. 428.
Gastein as a Watering Place. O. Marburg.—p. 429.

Prognosis of Pleuritis in Children.—Nobel reports his conclusions from observations in a series of cases in the University Children's Hospital in Vienna: Almost all cases of pleuritis in children, with the exception of those in which a different etiology can be clearly demonstrated, are of tuberculous origin. Of 78 children treated for pleuritis, 13 died, while 26 could not, for various reasons, be reexamined after dismissal from the hospital. Thirty-nine children were reexamined after intervals of varying length, ranging from a few months to nineteen years, and the clinical findings were compared with the roentgenologic evidence and the original findings. Of the 39 children so reexamined, 43.6 per cent. had completely recovered; 36 per cent. gave only slight evidence of having ever suffered from the disease; in 10 per cent. there were moderate changes and in a further 10 per cent. there were grave changes that were plainly traceable to the pleural affection. The prognosis of tuberculous pleuritis in children is accordingly quite favorable. The propagation of tuberculosis is, it seems, scarcely to be feared.

Zeitschrift für Tuberkulose, Leipzig

August, 1921, **35**, No. 1

*Immunity with Tuberculosis. A. v. Wassermann.—p. 1.
*Immunity Against Tuberculosis. F. Neufeld.—p. 11.
*Pathology of Tuberculous Pleuritis. T. Landgraf.—p. 29.
*Valvular Defects and Tuberculosis. F. Kellner.—p. 33.

Immunity in Tuberculosis.—Wassermann sums up our present knowledge in the statement that a person may be nonreceptive to tuberculous infection or at least extremely resistant to it. But this protection is found exclusively in those who already have some tubercle bacilli installed in their organism, even if only in minute numbers. They all respond positively to tuberculin tests although clinically healthy. Their condition is thus true immunity so long as the focus is kept in subjection by the defensive forces of the organism. In this condition of unstable immunity we have no means to eradicate the focus; all we can do is to strengthen the defensive forces and influence the tissues by preparations of tubercle bacilli. In this latter line is a field for research. Some believe that the effectual substance is formed in the tissues themselves under the influence of tuberculin, especially in the skin. Petruschky ascribes to the skin the main action in his tuberculin inunction treatment, and Ponndorf in his intradermal tuberculin injections. The latter has recently reported fine results from this.

Immunity to Tuberculosis.—Neufeld was assistant to Koch, and he reviews the long array of disappointments in efforts the world around to induce immunity to tuberculosis since Koch's day. None of the tuberculin preparations have ever displayed a direct immunizing action. The most they can do, he thinks, is to induce a focal reaction, this specific inflammation mobilizing the defensive forces and attracting them to the disease focus. There is no method of vaccination applicable to man. The only immunity attainable is that from mild infection, and efforts to realize it otherwise are inherently doomed to failure. Why the dietetic measures are so potent in tuberculosis is a mystery, as they display no such efficacy in other chronic diseases, such as syphilis, malaria and leprosy. A longer review of his article is given in the Berlin Letter, p. 1669.

Tuberculous Pleuritis.—Landgraf found at necropsy of a man of 30 who died after six months of pleuritis that the pleura was studded with cheesy foci while the lungs were intact, and the only glands involved were the cheesy substernal glands. In a man of 43 the bilateral pulmonary process and empyema were accompanied by foci of ossification in the pleura.

Valvular Defects and Pulmonary Tuberculosis.—Kellner comments on the rarity of valvular defects with pulmonary tuberculosis, citing clinical statistics of an average of not more than 0.5 per cent. of all the tuberculous. In his own 31 cases among 13,000 tuberculous, he could not detect any influence on the course of the disease. The tuberculosis itself may simulate valvular disease, which necropsy will disprove. On the other hand, a valvular lesion may induce symptoms suggesting pulmonary tuberculosis.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

Sept. 10, 1921, **2**, No. 11

*Skin Changes in Electric Accidents. J. P. L. Hulst.—p. 1286.
*Volume of Blood. K. J. Feringa and S. van Creveld.—p. 1297.
*Contact with Pleura Prevents Coagulation. M. A. van Herwerden.—p. 1303.
Toxic Series of Neo-Arsphenamin. J. W. van der Valk.—p. 1305.

Electric Accidents.—Hulst compares the changes in the skin in three fatal electric accidents without charring with those in the skin in four fatal burns. The heat seemed to be responsible for the changes observed in all. Artificial respiration failed to resuscitate after the electric accidents. Jellinek and Borutteau ascribe the fatalities to fibrillation of the heart, and advise measures to combat this.

Color Test to Determine Volume of Blood.—Feringa and Creveld report experimental research which has confirmed the ease and reliability of the injection of a stain to estimate the volume of blood. They cite recent American articles on the subject. Their experiments were made on rabbits with trypan red and diaminrein blue.

To Prevent Coagulation of Blood.—Van Herwerden announces the accidental discovery and the confirmation by extensive research of the fact that contact of blood with the pleura renders it incoagulable. Even a moment's contact is enough for the purpose. Addition of 10 c.c. of blood from the thoracic cavity of a guinea-pig to 100 c.c. of beef blood delayed coagulation for three hours. In his research he now makes a practice of slitting the heart and drawing the blood from the thoracic cavity, as this yields blood which keeps fluid. He is amazed that no one else seems to have ever noticed this.

Acta Chirurgica Scandinavica, Stockholm

1921, **54**, No. 1

*Death After Acacia Infusion. H. Olivecrona.—p. 1.
*Tendovaginitis and Tendinitis Stenosans. A. Troell.—p. 7.
Pathogenesis of Dupuytren's Contracture. A. Krogius.—p. 33.
*Aseptic Renal Pyuria. B. Runeberg.—p. 51.
Epiploitis in Relation to Ileus. S. Lindqvist.—p. 91.

Fatality After Infusion of Acacia.—In the case reported by Olivecrona, the woman of 63 developed fatal pulmonary edema almost at once after slow infusion by the vein of 500 c.c. of a 7 per cent. solution of gum acacia in normal saline. There had been an interval of forty-five minutes, before the infusion, after the gastro-enterostomy for duodenal ulcer, the third day after resection of the pylorus with an ineffectual gastro-enterostomy. Necropsy showed also evidence of fat embolism. This and the following article are in English, the others in German.

Tendovaginitis.—Troell has recently encountered a fifth case of tendovaginitis crepitans sine crepitatione. He has also had during the last three years six more cases of tendovaginitis stenosans of which he describes four in detail. The discovery of snapping finger in two of these cases is more than a casual coincidence. His operation in two cases confirmed the assumption that the ligament was too small. This stretched it so taut that the tension interfered with its functioning and induced irritation and pain. The disturbance was found in all at the same point, above the tendons of the abductor pollicis longus and brevis.

The So-Called Aseptic Renal Pyuria.—Runeberg operated in 29 of 55 cases of this kind. Tuberculosis seemed positive in a total of 18 cases, although no tubercle bacilli could be detected. Tuberculosis was manifest in 50 cases of abacterial pyuria with sound kidneys, while it could be excluded in 55. With tuberculosis of the kidney, an acute onset is rare, while fully 60 per cent. of the abacterial pyurias of other origin begin with an acute or very stormy onset. Even when the onset was mild, the course was rapid. Severe symptoms and almost symptomless periods alternate in the course of a few weeks. The benefit from medical measures is striking, and equally characteristic is the abrupt aggravation when treatment is stopped too soon. He orders staying in bed for a short time, courses of drinking, urine antiseptics, and dieting. The source of the blood-borne infection can sometimes be found in some skin or joint lesion. If medical measures fail, nephrectomy should not be postponed too long when the process is confined to one kidney and is making the patient a chronic invalid.